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Bulletin

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Thomas Bartholin.

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THE EFFECT OF ROENTGEN RAYS ON THE HEART

I. THE MICROSCOPIC CHANGES IN THE HEART MUSCLE OF RATS AND RABBITS FOLLOWING A SINGLE EXPOSURE *

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AND

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The heart muscle is always exposed to radiation when cases of mediastinal tumor, carcinoma of the left breast, or bronchial and lung tumor are treated in this region. In view of the importance of this organ, it is surprising how little we know regarding changes that might take place in the heart tissue following irradiation. Through the experiments of Roffo,[1] Krontowski[2] and Schubert,[3] we learned that the embryonic heart is rather resistant to roentgen rays. Roffo could not find any injury caused by irradiation with roentgen rays of long or short wavelength, in cultures of chicken embryo hearts. Krontowski demonstrated that there is a marked difference between the susceptibility of the embryonic organism as a whole and the individual embryonic organ: where a certain dose is fatal to the organism, no permanent injury results to the single organ or cell. Tissue cultures of the heart grew equally well when taken from the exposed or unexposed chicken embryo. Schubert confirmed these observations. He does state, however, that if the explantation of the heart tissue is done two hours after the irradiation, a definite retardation of the growth is noticeable, and a three hour interval prevented the growth completely in his experiments.

Regarding the behavior of adult hearts, it appears that no definite changes in size or histology were observed by Gordon, Strong and Emery,[4] who irradiated the precordium of rabbits. If there were any myocardial changes, they seemed very much like those in cases of infection and nutritional disturbances. The mechanism of the heart as controlled by the electrocardiograph showed variation in only one animal. According to Swann,[5] the surviving heart of frogs is very resistant to roentgen rays; all his experiments in this respect were negative. The isolated rabbit's heart dies in systole after prolonged irradiation, while a short exposure increases the degree of contraction; sometimes the diastole was lengthened. Longer treatments dilate the coronary vessels and cause tonic ventricular contraction. Tsuzuki,[6] who irradiated rabbits through the back (quality of radiation: 0.14 angstrom units, average wavelength, delivering approximately 24 and 30 per cent erythema dose to the heart), describes fine, fatty granules in the heart muscle cells after the exposure to 24 per cent erythema dose, and beginning fatty degeneration following the heavier dose. Ninety-six hours after the treatment, this change is very distinct. The author is not sure whether the recorded pathologic change is due to the direct or indirect effect of the roentgen rays. Induced by the observation of fibrosis in the lungs of patients who had received roentgen-ray treatment over the chest, Davis[7] irradiated the right lungs of rabbits and dogs (from 85 to 135 kilovolts; 12, 20 and 25 cm. target distance; 2, 4 and 6 mm. of aluminum, and twenty-eight, thirty and sixty minutes, time of exposure). All dogs with the exception of two showed cardiac changes on gross examination, consisting in a marked increase in the thickness of the wall of the right auricle and numerous petechial hemorrhages. "Microscopically, the right anterior auricular wall disclosed numerous areas of cell necrosis, proliferation of connective tissue, extravasation of red blood corpuscles and necrotic muscle fibers fused into hyaline masses."

The only clinical observations we were able to find in the literature have been reported by Schweitzer[8] and Emery and Gordon.[9] At the autopsy of a patient who had received treatments for a mediastinal tumor over a period of fourteen months (total of five series each consisting of ten fields; viz., four front and four back fields, one right and one left axilla; dose: 2 Sabouraud [approximately 50 per cent of an erythema dose] per field, filtered through 8 mm. of aluminum). Schweitzer found pronounced degenerative changes in the heart muscle which he is inclined to diagnose as "specific roentgen-ray injury." Emery and Gordon studied seventeen patients who were treated over the heart or other parts of the body, nine by means of the electrocardiogram and eight at postmortem. The authors con-

* Read before the Section on Radiology at the Seventy-Eighth Annual Session of the American Medical Association, Washington, D. C., May 20, 1927.

1. Roffo, A. H.: Die Wirkung der Röntgenstrahlen auf das "in vitro" gezüchtete Herz, Strahlentherapie **19:** 745, 1925.
2. Krontowski, A. A.: Zur Analyse der Röntgenstrahlenwirkung auf den Embryo and die embryonalen Gewebe, Strahlentherapie **21:** 12, 1925.
3. Schubert, M.: Zur Frage der biologischen Wirkung der Röntgenstrahlen und deren Erforschung mittels der Explantation, Strahlentherapie **24:** 551, 1927.
4. Gordon, B.; Strong, G. F., and Emery, E. S.: The Effect of Direct Radiation over the Precordium on the Heart Size, the Heart Mechanism and the Myocardium of Rabbits, Am. J. Roentgenol. **11:** 328 (April) 1924.
5. Swann, M. B. R.: A Study of the Immediate Effects of Roentgen Rays on the Functions of Certain Tissues and Organs, Brit. J. Radiol. **29:** 195 (June) 1924.
6. Tsuzuki, Masao: Experimental Studies on the Biological Action of Hard Roentgen Rays, Am. J. Roentgenol. **16:** 134 (Aug.) 1926.
7. Davis, K. S.: Intrathoracic Changes Following Roentgen-Ray Treatment: A Clinical and Experimental Study, Radiol. **3:** 301 (Oct.) 1924.
8. Schweitzer, E.: Ueber spezifische Röntgenschädigungen des Herzmuskels, Strahlentherapie **18:** 812, 1924.
9. Emery, E. S., Jr., and Gordon, B.: The Effect of Roentgenotherapy on the Human Heart, Am. J. M. Sc. **170:** 884 (Dec.) 1925.

clude that no definite evidence of a roentgen-ray injury to the heart following the administration of the average therapeutic dose could be detected by the methods used in this investigation. In view of all these observations, which appear to be somewhat at variance, we decided to study the effect of roentgen rays on the hearts of rats and rabbits by exposing the precordium to radiation of short wave-length, as usually employed in deep therapy.

TECHNIC

A water cooled Coolidge tube connected to a transformer with a mechanical rectifier served as the source of radiation. The potential, as measured by the sphere gap, read 200 kilovolts; 25 milliamperes current passed through the tube; the target distance was 40 cm., and the filter 0.5 of copper plus 1.0 of aluminum. The effective wavelength (Duane) corresponded to 0.16 angstroms. Under these conditions, the human erythema dose amounted to nine minutes, equivalent to a roentgen-ray value (energy of primary roentgen-ray beam measured with ionization chamber in air) of approximately 1,100 roentgen-ray units (American standard). It may be assumed then that about 80 per cent of the surface dose reached the heart muscle. A few animals were treated with a multiple of that dose; none died during the treatment, immediately after, or later, from any cause that could be traced to the effects of the exposure.

We irradiated two rats with an unfiltered radiation (130 kilovolts; 5 milliamperes; 30 cm. focal skin distance), the erythema dose of which was found under the given technic at two minutes, or 370 R units (in air). For the exposure, all animals were tied to a board with legs and body stretched; the heart region was carefully localized by palpation and controlled each time by autopsy. It appeared that a field of entry of

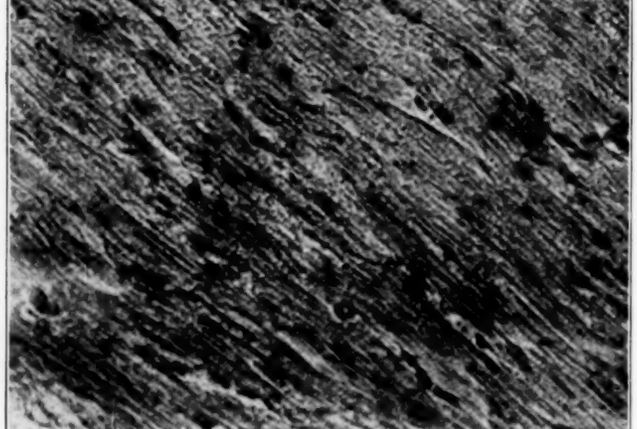

Fig. 1.--Rabbit 2, series III.

1.5 by 1.5 cm. for rats and about 2 by 2.5 cm. for rabbits admitted sufficient radiation to cover the entire heart surface. This field was cut into lead of 6 mm. thickness, which covered the rest of the body as close to the skin as possible. The results are based on a total of thirty-seven rats, five of which were controls, and twenty-nine rabbits, with five controls. All animals were killed by ether after certain intervals, and the chest organs were removed by carefully avoiding any mechanical insult to the heart; the heart was still beating when placed in 10 per cent formaldehyde solution. No macroscopic changes could be observed in any irradiated rat or rabbit heart. After thorough fixation, they were after-hardened and dehydrated in graded alcohols, put through xylene and embedded in paraffin. In every case, the whole heart of each rat was cut transversely into three blocks, and the rabbit hearts into four blocks. These blocks, after paraffin embedding, were cut transversely into serial sections;

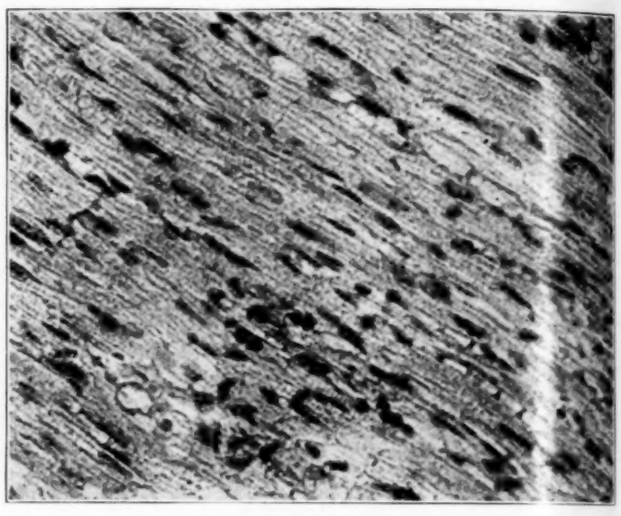

Fig. 2.—Rabbit 3, series III.

in the case of the rat hearts, the consecutive serial sections were stained; in the rabbit hearts, only every tenth section was stained. The sections were stained with hemalum and eosin and mounted in balsam in the usual way. For the demonstration of fatty changes in the heart, muscle frozen sections with staining by sudan III were used.

PROTOCOLS OF EXPERIMENTS

Rat 17, Series I, 4730-L-AE: 100 per cent;[10] one day;[11] negative.

Rat 1, Series III, 5022-L-AE: 100 per cent; one day; diffuse Zenker's necrosis. Slight lipoidosis.

Rat 7, Series III, 5025-L-AE: 100 per cent; one day; diffuse Zenker's necrosis; slight lipoidosis; areas of spontaneous myocarditis.

Rat 9, Series III, 5027-L-AE: 100 per cent; one day; diffuse early stage of Zenker's necrosis.

Rat 2, Series III, 5026-L-AE: control; one day; diffuse Zenker's necrosis; slight lipoidosis.

Rat 1, Series II, 4182-L-AE: 100 per cent; two days; slight diffuse lipoidosis; more marked hyaline change in muscle fibers; some pyknotic nuclei.

Rat 2, Series II, 4183-L-AE: 100 per cent; two days; no lipoidosis; diffuse hyaline change of muscle fibers; granular and pyknotic nuclei.

Rat 4, Series II, 4184-L-AE: 100 per cent; seven days; no lipoidosis; very slight hyaline change in muscle.

Rat 5, Series II, 4185-L-AE: 100 per cent; seven days; no lipoidosis; very slight hyaline change in muscle.

Rat 1, Series I, 3800-L-AE: 100 per cent; eleven days; vessels of heart dilated and filled with blood; passive congestion. No degenerative changes in epicardium, myocardium or endocardium, or in coronary vessels. (Bronchial node shows no changes attributable to irradiation.)

Rat 2, Series I, 3799-L-AE: 10 per cent; eleven days; congestion of coronary vessels. No degenerative changes in epicardium, myocardium or endocardium, or in vessel walls.

Rat 7, Series I, 3801-L-AE: control; eleven days; no evidence of irradiation in heart. Epicardium, myocardium, endocardium and coronary vessels negative.

Rat 3, Series I, 4172-L-AE: 100 per cent; thirty-five days; no evidence of irradiation.

Rat 4, Series I, 4173-L-AE: 100 per cent; thirty-five days; no evidence of irradiation in heart. (Lymph nodes show no evidence of irradiation.)

Rat 5, Series I, 4174-L-AE: 100 per cent; thirty-five days; no evidence of irradiation in cardiac tissue.

Rat 7, Series II, 4988-L-AE: 100 per cent; forty-five days; marked diffuse Zenker's necrosis of myocardium.

Rat 8, Series II, 4989-L-AE: 100 per cent; forty-five days; slight diffuse Zenker's necrosis of myocardium, early stage.

Rat 3, Series II, 4987-L-AE: 100 per cent; forty-five days; marked diffuse Zenker's necrosis of myocardium.

10. This refers to the human erythema dose (section on technic).
11. Time between treatment and killing.

Rat 6, Series I, 4733-L-AE: 100 per cent; sixty days; negative.
Rat 9, Series I, 4734-L-AE: 100 per cent; sixty days; slight lipoidosis of papillary muscle of left ventricle.
Rat 10, Series I, 4735-L-AE: 100 per cent; sixty days; slight lipoidosis of inner layer of muscle of left ventricle.
Rat 11, Series I, 4736-L-AE: 100 per cent; sixty days; myocardium negative; no change in lymph nodes.
Rat 13, Series I, 4728-L-AE: 100 per cent; sixty days; very slight hyaline change in myocardium. Negative?
Rat 14, Series I, 4727-L-AE: 100 per cent; sixty days; no changes in myocardium; some slight hyaline change. Negative? (Lymph nodes show no evidence of irradiation.)
Rat 15, Series I, 4731-L-AE: 100 per cent; sixty days; negative.
Rat 18, Series I, 4729-L-AE: 100 per cent; sixty days; negative?
Rat 12, Series I, 4737-L-AE: control; sixty days; diffuse hyaline change in myocardium of slight degree. Lymph nodes negative.
Rat 16, Series I, 4732-L-AE: control; sixty days; negative.
Rat 3, Series III, 5023-L-AE: 200 per cent; one day; slight diffuse Zenker's necrosis. No lipoidosis.
Rat 8, Series III, 5024-L-AE: 200 per cent; one day; well marked Zenker's necrosis of myocardium.
Rat 10, Series II, 4990-L-AE: 200 per cent; forty-five days; slight diffuse Zenker's necrosis of myocardium; early stage.
Rat 12, Series II, 4991-L-AE: control; forty-five days; diffuse early stage of Zenker's necrosis.
Rat 4, Series III, 5189-L-AE: 300 per cent; one day; marked Zenker's necrosis; early interstitial myocarditis.
Rat 10, Series III, 5372-L-AE: 300 per cent; one day; marked diffuse Zenker's necrosis; some inflammatory reaction in atrophic peribronchial fat tissue; acute purulent bronchitis; atrophy of bronchial lymphoid tissue.
Rat 5, Series III, 5373-L-AE: 400 per cent; one day; marked diffuse Zenker's necrosis; no myocarditis; slight lipoidosis of subendocardial muscle.
Rat 11, Series III, 5188-L-AE: 500 per cent (unfiltered); one day; marked Zenker's necrosis; interstitial inflammation in areas, particularly in auricles.
Rat 6, Series III, 5371-L-AE: 1,000 per cent (unfiltered); one day; slight diffuse Zenker's necrosis; no lipoidosis; lymph nodes show no irradiation changes except exhaustion of germ centers.
Rabbit 1, Series III, 4897-L-AE: 100 per cent; one day; cloudy swelling and slight fatty degenerative infiltration.
Rabbit 3, Series III, 4899-L-AE: 100 per cent; one day; Zenker's necrosis and marked fatty degenerative infiltration.
Rabbit X. V., Series III, 4895-L-AE: 100 per cent; one day; diffuse fatty degenerative infiltration of myocardium.
Rabbit A-25-B, Series III, 4896-L-AE: 100 per cent; one day; marked diffuse fatty degenerative infiltration of myocardium.
Rabbit 2, Series III, 4898-L-AE: control; one day; early Zenker's necrosis and moderate fatty degenerative infiltration.
Rabbit 6, Series II, 4186-L-AE: 100 per cent; seven days; marked diffuse lipoidosis; very slight hyaline change.
Rabbit 7, Series II, 4187-L-AE: 100 per cent; seven days; slight lipoidosis, involving papillary muscles chiefly; marked hyaline change of muscle; pyknosis of vascular endothelium (bronchial nodes show no irradiation changes).
Rabbit 5, Series I, 4188-L-AE: died after nine days; 100 per cent; heart muscle atrophic; fatty degenerative infiltration of papillary muscles; diffuse hyaline change of slight degree.
Rabbit 1, Series I, 3822-L-AE: 100 per cent; ten days; diffuse lipoidosis (fatty degenerative infiltration, most marked in myocardium of left ventricle); slight granular change in muscle nuclei; otherwise negative.
Rabbit 2, Series I, 3823-L-AE: 100 per cent; ten days; diffuse lipoidosis (fatty degenerative change) in myocardium of both ventricles; slight granular change in muscle nuclei; in right ventricle the lipoidosis is most marked in outer muscle layer.
Rabbit 3, Series I, 3824-L-AE: control; ten days; fatty degenerative infiltration, most marked in outer and inner muscle layers of left ventricle, and in outer layer of right. Scattered muscle fibers show early hyaline change (Zenker's). Very slight granular change in muscle nuclei.
Rabbit 1, Series II, 4178-L-AE: 100 per cent; fifteen days; well marked lipoidosis of inner layer of myocardium of both ventricles. (Bronchial nodes show no effect of irradiation.)
Rabbit 2, Series II, 4179-L-AE: 100 per cent; fifteen days; well marked lipoidosis of inner and outer myocardial layers of left ventricle and of outer of right ventricle. (Bronchial lymphoid tissue reduced in amount.)
Rabbit 3, Series II, 4180-L-AE: 100 per cent; fifteen days; moderate lipoidosis of inner layer of myocardium. Early hyaline change in scattered muscle fibers.
Rabbit 5, Series II, 4181-L-AE: control; fifteen days; slight diffuse lipoidosis; slight scattered hyaline change.
Rabbit 4, Series I, 4175-L-AE: 100 per cent; thirty days; diffuse lipoidosis (fatty degenerative infiltration); most marked in inner muscle layer and papillary muscles of left ventricle; no granular change in nuclei.
Rabbit 5, Series I, 4176-L-AE: 100 per cent; thirty days; no lipoidosis; very slight change in muscle.
Rabbit 6, Series I, 4177-L-AE: 100 per cent; thirty days; well marked lipoidosis of myocardium; slight hyaline change of some muscle fibers (area of infective myocarditis).
Rabbit 8, Series II, 5017-L-AE: 100 per cent; forty-five days; diffuse lipoidosis and early Zenker's necrosis.
Rabbit 9, Series II, 5018-L-AE: 100 per cent; forty-five days; diffuse early stage of Zenker's necrosis; slight lipoidosis.
Rabbit 10, Series II, 5019-L-AE: 100 per cent; forty-five days; diffuse early stage of Zenker's necrosis; very slight lipoidosis.
Rabbit 12, Series II, 5021-L-AE: control; forty-five days; diffuse moderate Zenker's necrosis; slight lipoidosis.
Rabbit 7, Series I, 4849-L-AE: 100 per cent; sixty days; marked fatty degenerative infiltration of the inner layer of myocardium of both ventricles.
Rabbit 9, Series I, 4850-L-AE: 100 per cent; sixty days; marked fatty degenerative infiltration of inner layer of myocardium; less marked of subepicardial layers.
Rabbit 10, Series I, 4851-L-AE: 100 per cent; sixty days; marked fatty degenerative infiltration of inner layer of myocardium; less marked of outer layer.
Rabbit 11, Series I, 4852-L-AE: 100 per cent; sixty days; marked fatty degenerative infiltration of inner layer of myocardium; less marked of remainder.
Rabbit 12, Series I, 4853-L-AE: control; sixty days; marked fatty degenerative infiltration of inner layer of myocardium; less marked of remaining portion.
Rabbit 4, Series III, 4900-L-AE: 200 per cent; one day; marked Zenker's necrosis and marked fatty degenerative infiltration of myocardium.
Rabbit 11, Series II, 5020-L-AE: 200 per cent; forty-five days; slight diffuse Zenker's necrosis; no lipoidosis.

PATHOLOGIC COMMENT

The pathologic changes observed in the myocardium of the experimental and control animals consist essentially of early stages of Zenker's necrosis (hyaline degeneration) and lipoidosis. The first of these may in part represent a purely agonal condition increased somewhat by the fixation of the beating heart in formaldehyde solution. The strong contraction of the muscles that is produced in this way gives microscopically the appearance of an early and diffuse Zenker's necrosis.

The lipoidosis observed particularly in the rabbits' hearts may represent merely a nutritional condition of the animal (figs. 1 and 2). It is very doubtful whether this has any pathologic significance in our experiments.

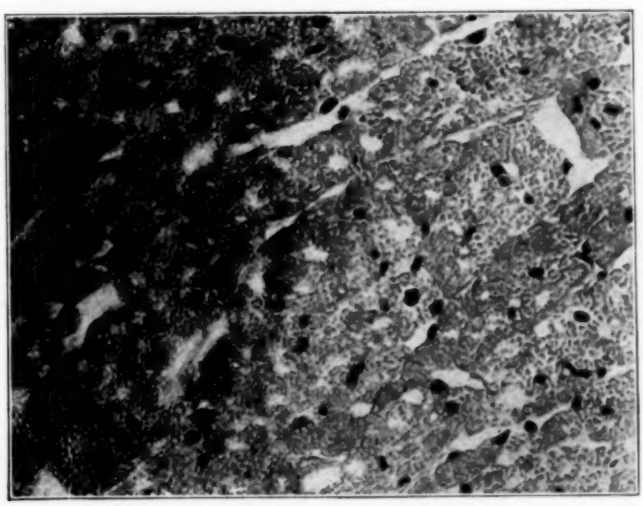

Fig. 3.—Rabbit 4, series III.

If the heart were injured so as to weaken the circulation, the fatty changes might be regarded as a result of lessened oxygenation and in this way might be a secondary pathologic effect of irradiation. It seems very unlikely that it bears any primary relationship to the roentgen-ray exposure. Both the Zenker's necrosis and the fatty change are very commonly associated with infections, anemia, and altered nutritive states of experimental animals, showing in the controls as markedly as in the treated animals. Therefore, the ordinary degree of these changes cannot be considered as indicating any injurious effects of the roentgen rays. In all of the foregoing protocols, it is probable that the lipoidosis (fatty degenerative infiltration) can be wholly excluded as having any pathologic significance. There remains, therefore, only the more marked degree of Zenker's necrosis (hyaline degeneration) to be considered as resulting from the irradiation.

In the case of the rabbits, only one (rabbit 4, series III) showed an unusual degree of Zenker's necrosis without any other cause than radiation to account for it (fig. 3). This, then, may be reasonably assumed to be the result of irradiation. In this instance, twice the average dose had been given.

In two rats (rats 1 and 2, series II), after a two day interval, a definite hyaline degeneration with granular and pyknotic nuclei was found, of a degree warranting its interpretation as being caused by irradiation (fig. 4). In rats 4 and 5, of the same series, after an interval of seven days, only slight hyaline changes were noted. This may be considered as possible recovery. Nevertheless, in two other animals (rats 3 and 7, series II), after an interval of forty-five days, a rather

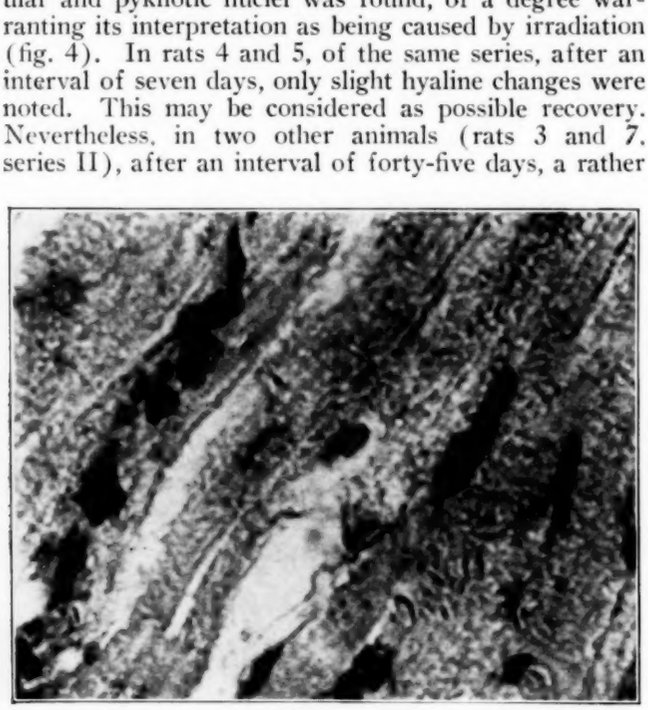

Fig. 4.—Rat 1, series II.

marked degree of Zenker's necrosis in the myocardium was still present (fig. 5). In the absence of any other explanation, it may be assumed that the persistence of the lesion was due to a failure of recovery, or it could be a late reaction such as is so often seen in the skin. Raising the dose to 200, 300 or 400 per cent (series III, rats 4, 5, 8 and 10) produced a marked increased degree of Zenker's necrosis in the heart muscle (fig. 6). Comparing with this observation the condition of rat 3 in series III, the difference in results in spite of the same exposure and time period can be explained perhaps by a different individual resistance or some other unknown factor. The same might apply to the discrepancy observed in rats 6 and 11 of series III.

SUMMARY

1. The precordium of thirty rats and twenty-four rabbits was exposed to roentgen rays of short wavelength (lambda effective equal to 0.16 angstroms), as used in deep roentgenotherapy. The surface dose amounted to one human erythema dose, the roentgen-ray value to 1,100 roentgen-ray units. The animals were killed at various intervals after the treatment and the heart was examined microscopically.

2. No clinical symptoms representing the signs of roentgen-ray injury during or following the exposure could be noted; there were no gross pathologic changes at autopsy.

3. The microscopic examination of the hearts of rabbits was positive in only one case. The unusual degree of Zenker's necrosis present in the heart of this animal cannot be explained by any other cause than irradiation.

4. In two rats, the microscopic changes in the heart muscle appeared to be marked enough to warrant its interpretation as a roentgen-ray injury. The remaining animals showing definite degeneration of the heart muscle belonged to a group exposed to higher doses.

5. We conclude from these investigations that the single exposure of the precordium to roentgen rays of the quality and quantity described in this paper, and corresponding to one human erythema dose, does not produce definite and irreparable injury in the heart muscles of adult rats and rabbits.

University Hospital.

ABSTRACT OF DISCUSSION

DR. B. H. ORNDORFF, Chicago: The reaction in the thoracic viscera, anatomic, physiologic and pathologic, when intense radiation is administered, is a problem of great importance to the radiotherapist. Almost every radiologist who has applied intense radiotherapy for breast malignancies has encountered changes in the thoracic viscera in certain cases which demand careful and continued observations. The picture may be that of a progressive increase in radiodensity of the irradiated side of the thorax, with some increased illumination of the opposite side, an apparent decrease in the size of the heart and mediastinal densities with accentuation of their radiodensity. The pleural density becomes visible, and the viscera are misplaced toward the side receiving intense radiation. As pointed out by the authors, there appears to be a limited amount of work recorded in the literature concerning a study of the changes in these viscera, so their contribution warrants our commendation and careful consideration. In my series of cases in which intense irradiation of the chest was administered, I have observed ten patients who reacted as described with varying degrees of severity. Three of these patients died, and a postmortem examination of the thorax was secured. One case, in particular, commanded our interest more intensely. A man, aged 64, weighing 220 pounds (100 Kg.), 6 feet 2 inches (188 cm.) tall, who had always been healthy and robust, suffered a very severe coughing spell one morning, and expectorated a mass of tissue, which careful study revealed to be carcinoma. Examination showed a density in the left lung, extending into the central part of the lower lobe. Between June and Decem-

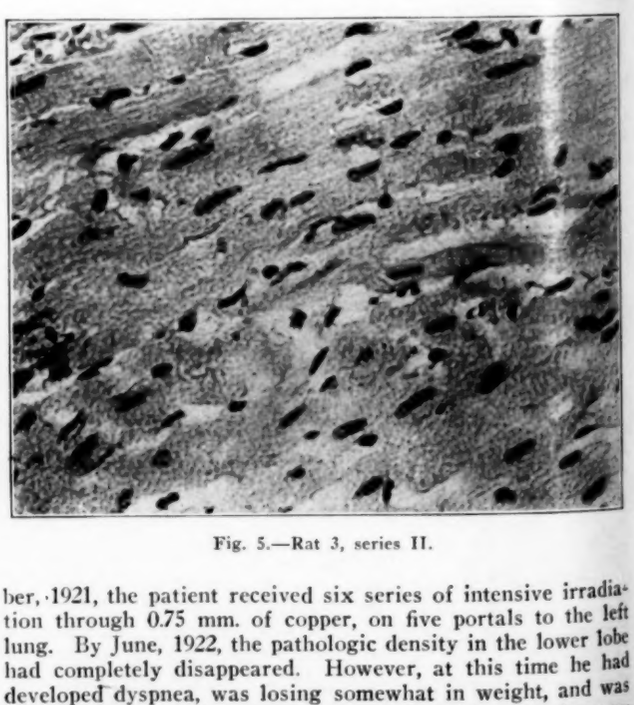

Fig. 5.—Rat 3, series II.

ber, 1921, the patient received six series of intensive irradiation through 0.75 mm. of copper, on five portals to the left lung. By June, 1922, the pathologic density in the lower lobe had completely disappeared. However, at this time he had developed dyspnea, was losing somewhat in weight, and was also showing a diffuse density over the entire left pulmonary area. A few months later, it was observed that these conditions had become exaggerated and that the viscera were misplaced. The heart outline became smaller and the circulation became greatly embarrassed. Anorexia, asthenia, dyspnea, vertigo and hypotension forced him to bed, and he died in December. At postmortem examination, the heart was

small, and the auricular fat had disappeared. It was misplaced well to the left, and was pale. A mild visceral pericarditis with some adhesions to a markedly thickened parietal pericardium was found. There was also a marked hypertrophic pleuritis with firm adhesions, and aerated lung parenchyma had almost completely disappeared. The histologic examination of the heart showed marked increase of the connective tissue elements, but no important change was noted in the muscular elements or endocardium which could be definitely ascribed to the radiation reaction.

DR. EUGENE S. KILGORE, San Francisco: Several years ago, when high voltage deep therapy was first used, we began to study electrocardiograms before and after treatment in patients receiving a heavy dosage throughout the left chest. However, by this or other methods of examination, we never found evidence of heart changes attributable to irradiation, and the research was discontinued. I should like to ask whether any of the members of this section can relate any experience as to the effect of irradiation of the heart in cases of angina pectoris.

DR. E. A. POHLE, Ann Arbor, Mich.: In February, 1927, L. C. Ecker reported one case, and suggested that this procedure should be tried in desperate cases. Small doses (suberythema dose) are recommended, to be repeated at intervals

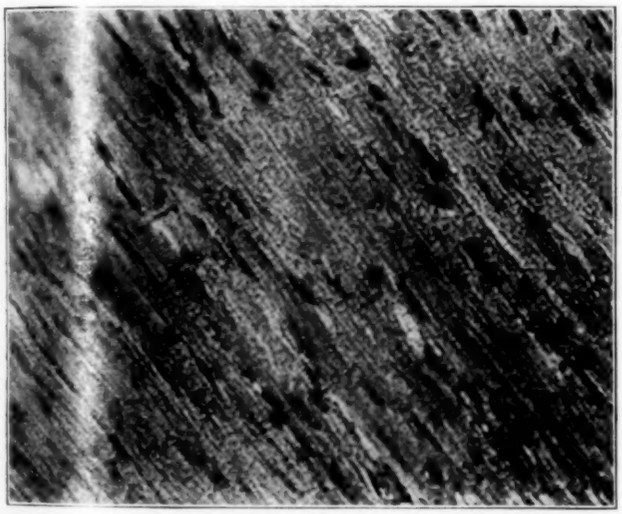

Fig. 6.—Rat 10, series III.

of from ten days to four weeks. The lower cervical and the upper dorsal regions were exposed because the patient would not consent to a sympathectomy. I should feel somewhat reluctant about irradiating the heart region itself in a case of angina pectoris. As far as our experiments on these animals are concerned, we have not attempted to transfer the conclusions to human beings. We endeavor to do this work very systematically. We have started by giving one single exposure, and have studied the hearts for subsequent pathologic changes. We shall continue this work now by giving a number of exposures or a series of treatments, as is usually done in deep therapy, and then we shall venture to transfer our observations to the clinical work.

Origin of Public Health Organizations.—Public health organizations owe their origin to the medical profession. To it also they owe a large part of the scientific information on which they base their methods. To the observations and reports of medical men in practice they are constantly indebted for knowledge of the occurrence, the prevalence and the nature of the diseases which they attempt to combat; but, unfortunately, such is the tradition, the custom, the accepted mechanism of health practice in this country that only to a slight extent have they utilized or attempted to make use of the enormous potential power of the practicing element of the medical profession in the cause of preventive medicine.—Draper, W. F.: *Pub. Health Rep.* **42**:2242 (Sept. 9) 1927.

FUSION OPERATION ON THE FOOT*

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Fusion of two or more bones of the foot is done to correct deformity and stabilize the foot or to relieve pain, in order that the individual may the better stand and walk. Arthrodesis, or surgical ankylosis, of a joint appears to be destructive instead of constructive; but experience has taught that it is often the only means to maintain correction of a deformity and to hold the foot in the best position for function. Part of the flexibility of the foot is sacrificed to secure an efficient stability, which is so essential for weight bearing and locomotion. Joint motion is of little or no value if it cannot be controlled or if it is painful. Fortunately, there are so many joints in the foot that the loss of motion in any one does not too seriously impair the flexibility.

Arthrodesis of one or more joints of the foot is useful in the correction of deformities and disabilities resulting from infantile paralysis, spastic paralysis, other neuromuscular diseases, congenital clubfoot, fractures and dislocations, Chopart's amputation, tuberculosis, and persistent weak foot. Fusion is most commonly done in the ankle and the subastragalar and midtarsal joints.

By the term "subastragalar" joint is meant the articulation of the astragalus with the os calcis beneath and the scaphoid in front. In it occur lateral motions of the foot. Supination and pronation take place around a horizontal axis; inversion, or internal rotation, and eversion, or external rotation, around a perpendicular axis. By adduction of the foot is meant an adduction of the part of the foot anterior to Chopart's, or the midtarsal, joint. The tibialis posticus muscle inverts the foot, the peroneus brevis everts it. The tibialis anticus supinates and the peroneus longus pronates the foot. The tibialis anticus and the long extensors of the toes are the dorsiflexors. If either of these is paralyzed, the foot dorsiflexes either in the position of supination or the position of pronation. These motions of pronation and supination, inversion and eversion are not clearly differentiated in many works on general surgery or orthopedic surgery. They all take place in the subastragalar joint.

When a lateral deformity of the foot occurs as a result of infantile paralysis, it has been found by years of experience that it is very difficult or impossible by muscle transplantations to restore balance of the foot so that the patient has effective control. The deformity may not be corrected, or it may relapse, or an opposite one may develop. It should be emphasized that the only reliable method of securing and maintaining correction is by fusion of the bones; in other words, by skeletal fixation.

SUBASTRAGALAR ARTHRODESIS

Indications.—Talipes valgus develops after paralysis of the tibialis anticus muscle. It is more marked when the tibialis posticus also is paralyzed because the foot then becomes everted as well as pronated. Weakness or complete paralysis of the peronei causes varus. An arthrodesis of the subastragalar joint, i. e., a fusion of the astragalus with the os calcis and with the scaphoid, will correct these lateral deformities.

* Read before the Section on Orthopedic Surgery at the Seventy-Eighth Annual Session of the American Medical Association, Washington, D. C., May 20, 1927.

At the same time, active muscles whose functions are abolished by the arthrodesis should be transplanted to that part of the foot where they will be most useful. The peroneus brevis cannot evert the foot after a subastragalar arthrodesis, but it may be transplanted to assist the weak dorsiflexors. The tibialis posticus, which is the opponent of the peroneus brevis, and the peroneus longus, opponent of the tibialis anticus, also may be used as plantar flexors or dorsiflexors.

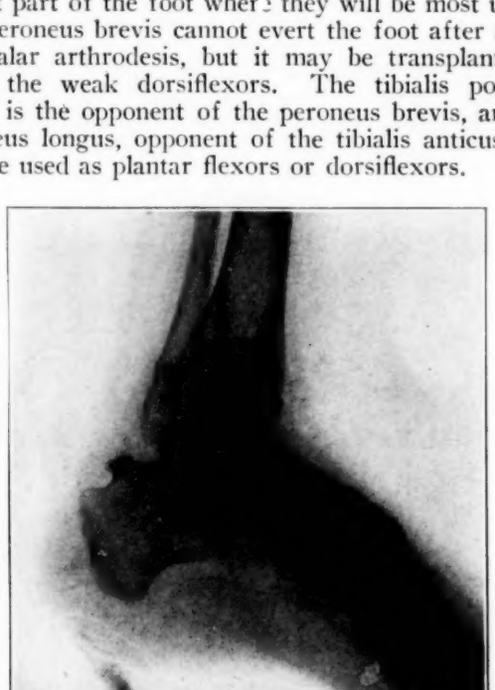

Fig. 1.—Posterior displacement of foot in horizontal transverse section.

A second reason for the transplantation of unopposed muscles is that they remain as deforming agents unless transferred to neutral positions. A subastragalar arthrodesis will prevent any recurrence of deformity in the subastragalar joint, but unequal lateral muscles will produce a corresponding lateral deformity in the ankle joint where, under normal conditions, no lateral motion is possible. The body of the astragalus becomes shortened in its perpendicular axis on the outer side in talipes valgus, and on its inner side in varus. Indeed, this deformity of the astragalus may be a component of a severe lateral deformity of the foot, and it is not corrected by a subastragalar arthrodesis; or, as mentioned above, it may develop following an arthrodesis when deforming muscles have not been transplanted.

I have been able to correct this deformity by splitting the astragalus horizontally on its shortened side, and driving in a bone wedge taken from the tibia. Thus, the two sides of the astragalus are restored to equal height or thickness, so that, when the foot is placed squarely beneath the tibia, the superior articular surface of the talus is in complete contact with the articular surface of the tibia, and the talus cannot twist around in the mortise made by the malleoli.

Technic of the Operation.—Dr. G. G. Davis performed this operation subcutaneously. A gouge is inserted into the outer aspect of the subastragalar joint at the site of the tarsal canal, which is just in front of and below the external malleolus. The articular cartilage is removed from the superior surface of the os calcis and from the inferior surface of the astragalus, first, in that portion of the joint which lies posterior to the canal, and then in the anterior part. The astragaloscaphoid articulation is best entered through a small incision on the inner side of the foot, about an inch in front and below the internal malleolus. In this procedure, it is important to dig up the bones thoroughly. The small pieces of cartilage and bone are allowed to remain within the foot, as it is believed that they probably aid in the formation of callus and in the ultimate fusion of the bones.

The deformity is then corrected by manipulation. The anterior part of the foot and the os calcis are brought around into the normal position with relation to the astragalus and to the tibia through which weight is transmitted. In other words, normal mechanics of weight bearing is restored, so that a line drawn down the crest of the tibia and extended forward over the foot falls along the second metatarsal bone. The os calcis is pushed over beneath the astragalus and the tibia, so that on standing weight will be transmitted directly through its center to the ground.

If the surgeon desires he may do an open operation through an incision along the outer side of the foot horizontal to the plantar surface, beginning at the tip of the external malleolus and running forward 1½ or 2 inches. The fat is excised from the tarsal canal, and the lateral aspect of the astragalus, including the anterior part of the body and the neck, is exposed. The joint between the astragalus and the os calcis is then clearly visible. With osteotome and mallet, the superior surface of the os calcis and the inferior surface of the astragalus should be removed. With a gouge one should then remove the sustentaculum tali. If this is done with the osteotome and mallet there is danger of wounding the posterior tibial artery, but the gouge is more easily controlled by the hand. The articular surface of the head of the astragalus is removed with the osteotome, and the cartilage removed from the scaphoid

Fig. 2.—Modified horizontal transverse section, showing anterior bone block on astragalus.

with the gouge. The foot is then placed in correct position beneath the astragalus, and the wound closed in the usual fashion.

The operation performed by Dr. Michael Hoke is essentially the same as this in principle. A subastragalar arthrodesis is secured by removing the cartilage from the astragalus and the os calcis. The head of the astragalus is excised and the cartilage pared from it. The scaphoid is denuded. The foot is placed in the

proper position beneath the astragalus, and the diminished head of the astragalus is replaced to help maintain the foot in this position.

But, after all, that which maintains the foot in normal position is the fusion of the scaphoid and the os calcis with the astragalus. Whether a portion of the head of the astragalus is deliberately placed to one side or the other or whether, as in the Davis operation, the fragments of bone which are dug up remain within the foot and fill in the empty spaces after the foot has been molded into a proper position for weight bearing is of no essential importance. In the Davis operation, sufficient of the head and even the neck of the astragalus in severe deformities must be removed to allow complete correction of the foot. The great similarity of the Davis and the Hoke operations is thus apparent. In both is secured a restoration of the proper architecture and mechanics of the foot, and this is maintained by a fusion of the astragalus, the os calcis, and the scaphoid.

HORIZONTAL TRANSVERSE SECTION

The original Davis operation of horizontal transverse section of the foot to correct talipes calcaneus or calcaneovalgus consisted of a subastragalar section of the foot, as in the operation for subastragalar arthrodesis, plus a backward displacement of the foot beneath the astragalus. Lateral deformity is corrected by the arthrodesis, and calcaneus is improved or corrected by the backward displacement of the foot. To facilitate the posterior displacement, the lateral ligaments of the ankle are freed from the malleoli by means of a sharp-pointed curved elevator through the incisions already made on the sides of the foot. It is necessary to gouge away the head of the astragalus more thoroughly than in a subastragalar arthrodesis, so that it should not project on the dorsal surface of the foot when the foot is displaced backward beneath the astragalus.

This procedure corrected efficiently many cases of deformity, but it was not always successful even when done by Dr. Davis himself or by his followers.

It would appear that any operation to correct calcaneus must do efficiently one or all of three things. The body weight may be transferred forward on the foot, so that it is impossible for the foot to tilt up in front when weight is put on it. There is a limit to the amount of displacement which may be secured without producing an unsightly foot. But I think it may be said that in most cases in which the Davis operation has failed, the foot has not been displaced far enough back beneath the astragalus. In the second place, some means may be used to prevent the posterior part of the os calcis from descending. A fixation of the achilles tendon into the tibia may do this, but it does not correct the cavus which is usually present, nor does it control the lateral deformity of the foot. A subastragalar section is necessary to do this. It seemed to me that this method of fixation might be accomplished by freeing the lateral ligaments of the ankle subperiosteally from the malleoli and the astragalus, so that they should be carried backward with the os calcis and make strong check ligaments to dorsiflexion of the foot. Dr. J. O. Wallace employs this effectively in the Davis operation. A third means of curing calcaneus is to establish an effective bone block to prevent dorsiflexion.

The Whitman operation of astragalectomy probably owes its efficiency to the use of all three of these principles. The foot is displaced backward; the anterior lip of the articular surface of the tibia contacts with the tarsus and blocks dorsiflexion, and the ligaments of the ankle together with scar tissue act as check ligaments posteriorly. Why, then, should we not be satisfied to accept this operation as the logical means of correction of this condition? Because lateral deformity of the foot is a not uncommon result when the foot twists around the malleoli, and because the removal of the astragalus produces some further shortening of an already shortened extremity. If a bad result is obtained by an astragalectomy, it may not be easy of correction. The astragalus may be removed but once. I believe that the Davis operation guarantees better fixation to correct lateral deformity; that, if unsuccessful, it does not make the foot worse than it was originally; that, if deformity persists or recurs after operation, a subastragalar section may be done again and again and the foot placed in the correct position, and that certain modifications which have been made to take advantage of all three means of correction of calcaneus make a satisfactory result almost certain.

Fig. 3.—Talipes cavus.

MODIFICATION OF THE HORIZONTAL SECTION

A subastragalar operation is done through the open incision with the use of a tourniquet, as already described. A little more bone is removed with the cartilage than is done in cases of subastragalar arthrodesis, because if there is more space between the astragalus and the os calcis the foot can be more readily displaced backward. The entire head of the astragalus is removed, as it interferes with the backward displacement of the foot.

The incision is prolonged upward along the fibula for from a half inch to an inch. The external lateral ligament is then freed from the fibula subperiosteally by means of an osteotome, and the ligaments of the ankle are freed from the posterior lip of the tibia. Incision is made over the internal malleolus, and the internal ligament is freed subperiosteally from the tibia. The os calcis together with the anterior part of the foot is then easily displaced backward from 1 to 2 inches, according to the necessity of the case. The lateral ligaments with the periosteum slide backward and tighten as the foot is displaced posteriorly. We believe that these ligaments, together with the scar tissue which forms about them, act as a check to dorsiflexion of the foot.

The Davis operation has been further modified by making a bone block on the anterior aspect of the superior articular surface of the astragalus. It will

be observed in cases of calcaneus that the foot dorsiflexes until the anterior lip of the tibia contacts with the groove, or fossa, which lies on the superior surface of the astragalus in front of the articular cartilage. When the astragalus has been exposed by an external incision, the ankle joint is opened and the superior surface of the astragalus is visible together with the anterior lip of the tibia. An osteotome is then forced longitudinally into the astragalus beneath the articular cartilage at its lower anterior portion. The articular cartilage is lifted up until it contacts with the anterior lip of the tibia when the foot is placed in plantar flexion. A portion of bone which has been removed from the os calcis or the astragalus when the subastragalar section was made is then forced in beneath the elevated articular cartilage. This holds it in position against the anterior lip of the tibia and prevents dorsiflexion of the foot.

By this procedure, of course, all the lateral instability of the foot is corrected by the fusion that occurs in the subastragalar joint. Talipes cavus, if present, is also eliminated.

When the tibialis posticus and the peronei are active, they should always be transplanted to the os calcis, since in many cases these transplanted muscles add greatly to the function of the foot and make possible strong and effective active plantar flexion.

FLAIL FOOT

In flail, or dangle-foot, there is a complete paralysis of the foot. It is unstable on weight-bearing. It may assume a position of valgus or one of varus. There may be a tendency to calcaneus. The patient is most annoyed, however, by the dropping of the foot in front, so that he must lift it high from the ground to prevent dragging of the toes.

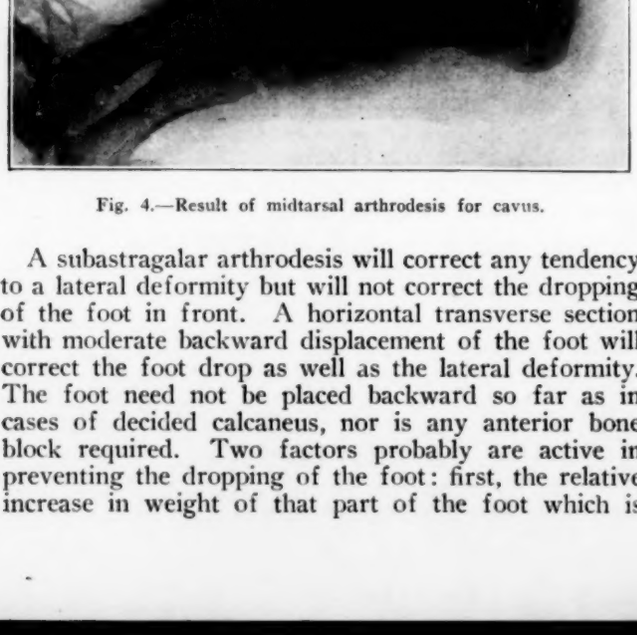

Fig. 4.—Result of midtarsal arthrodesis for cavus.

A subastragalar arthrodesis will correct any tendency to a lateral deformity but will not correct the dropping of the foot in front. A horizontal transverse section with moderate backward displacement of the foot will correct the foot drop as well as the lateral deformity. The foot need not be placed backward so far as in cases of decided calcaneus, nor is any anterior bone block required. Two factors probably are active in preventing the dropping of the foot: first, the relative increase in weight of that part of the foot which is behind the ankle joint which tends thus to balance the weight of the anterior part, and, second, the scar tissue which forms about the ankle joint after the lateral ligaments have been elevated subperiosteally from the malleoli.

MIDTARSAL ARTHRODESIS

Indications.—There are two types of cavus, talipes plantaris and talipes arcuatus. In the former the os

Fig. 5.—Old fusion of ankle and subastragalar joints.

calcis is in practically normal position with reference to the tibia, but the anterior part of the foot drops down at the midtarsal joint. Frequently, the angulation in this joint is 90 degrees. There is an apparent but not a real equinus as the achilles tendon is not contracted. This fact is demonstrated by a lateral roentgenogram. This deformity is due to weakness of the extensor communis digitorum.

Talipes arcuatus occurs with calcaneus. The achilles tendon is paralyzed; the os calcis is tilted upward in front and there is marked angulation in the midtarsal joint. This type of cavus is corrected when the foot is displaced backward in doing a horizontal transverse section for calcaneus.

Talipes plantaris can be cured by a midtarsal arthrodesis, combined usually with a plantar fasciotomy. One may use the substitute for fasciotomy devised by Steindler, whereby the plantar fascia and short flexors of the toes are separated subperiosteally from the os calcis and allowed to slide forward. However, this leads sometimes to formation of an exostosis on the plantar surface of the os calcis. I have found it as effective to divide the plantar fascia and the short flexors of the toes close to their origin from the os calcis without doing a subperiosteal separation. This may be done by inserting the scalpel longitudinally on the inner aspect of the os calcis close to the sole of the foot, turning the blade upward, and dividing all the tissues down to the os calcis.

Any effort to correct cavus by means of tendon transplantation or tendon fixations is less effective than is a fusion operation.

Talipes Planus.—Persistent cases of planus in relaxed or rigid feet and severe congenital flatfoot have been corrected by midtarsal arthrodesis.

ARTHRODESIS OF THE ANKLE

Formerly, arthrodesis of the ankle was done to cure talipes calcaneus, but I believe that the Whitman astragalectomy and the Davis horizontal transverse section result in a better foot. After the former operation the foot is very rigid and inelastic, whereas after the latter it possesses a considerable amount of elasticity.

It is my custom to do an arthrodesis of the ankle only in order to stabilize the knee, as advised by Dr. G. G. Davis. If the ankle is ankylosed in slight plantar flexion, when the patient bears weight first on the ball of the foot and then on the heel the knee is of necessity forced and held backward and thus stabilized. In cases of contracture of the knee, a supracondylar osteotomy of the femur is done to make a back knee and to correct the knock knee which is usually present. The production of the moderate back knee and a horizontal transverse section of the foot are usually sufficient to stabilize a flail extremity, and I perform ankle fusion much less frequently than I did formerly.

OTHER CONDITIONS IN WHICH THESE OPERATIONS ARE APPLICABLE

The operations described were devised by their authors to correct the deformities of infantile paralysis, but they have been found useful in other diseases and conditions.

Spastic paralysis, muscular dystrophies, injuries of nerves, and other neuromuscular conditions may cause deformities of the foot which can be corrected by these operative procedures.

It is my custom to correct congenital clubfoot by manipulation and plaster casts whenever possible. When the feet are too old and rigid to be thus cured, subastragalar and midtarsal arthrodeses will correct even the most inveterate cases. Sufficient bone is gouged away on the outer aspect of these joints to

Fig. 6.—Result of horizontal transverse section for calcaneovalgus.

allow of full restoration of the foot to a normal weight bearing position.

As early as 1917, I performed arthrodesis of the ankle in a case of old Pott's fracture in which very slight motion was present in the ankle joint, and this little motion painful. The patient thus secured a useful, painless foot.

Fractures of the os calcis are notorious for the prolonged disability which they frequently cause. Careful examination of many of these cases has convinced me that the pain which is the leading cause of the disability is due in large part, or altogether, to a condition of the subastragalar joint. Motion in it is limited, and when forced is painful. The greatest pain in walking occurs when the foot is twisted by some inequality on the ground. Tenderness is present along the margin of the joint, particularly on the outer side of the foot. Furthermore, the os calcis is frequently found to be displaced outward beneath the astragalus, so that the foot is in a position of valgus, and the patient suffers pain because of the strain resulting from this deformity. The rational method of cure for these disabling conditions is to be found in a subastragalar arthrodesis.

Persistent pain following fractures of the foot that involve tarsal joints may be relieved by the appropriate fusion operation.

One occasionally sees an old Chopart's amputation in which the os calcis has been tilted up behind and down in front, so that the patient walks on its anterior border and on the scar of the old operation. He complains of pain at the point of weight bearing. I have effected relief from this condition by making a section through the subastragalar joint and moving the os calcis forward. It ankyloses with the astragalus, and the weight is thus transferred from its anterior extremity to its center.

Fig. 7.—Result of subastragalar arthrodeses for valgus.

Tuberculosis of the ankle and the foot may heal with fibrous ankylosis of the joints which were involved in the disease. Such an ankylosis, here as in the knee and the hip, is apt to be painful. The conversion of this into a bony ankylosis by the methods of arthrodesis has been found to relieve the pain and secure a stable foot.

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ABSTRACT OF DISCUSSION

DR. FRED H. ALBEE, New York: The technic just described gives us a new conception of Dr. Campbell's bone block; but Dr. Gill's procedure applies to the front of the joint, Dr. Campbell's to the rear. I am a very strong believer in arthrodesis, or fusion, if one wishes to call it that. It is the most trustworthy way to hold the corrected bone. It is very unsafe to trust a transplanted tendon or muscle to overcome and correct deformity at the same time. I believe that we should correct deformity in some way on the osseous portion of the foot, and arthrodesis is the most effective measure we use to overcome deformity and to hold the corrected posture. In cases of flail foot, particularly in cases in which there are not enough hamstring forces to transplant to take the place of the quadriceps, I have found that plantar astragalar arthrodesis with slight equinus position is very valuable. Every one places emphasis on pushing the foot back. We must pull the foot forward as far as we can, to lengthen the foot in front as much as possible so as to make the best use and to get the most effect from reverse leverage which will throw the knee back into a hyperextension block. If there happens to be a fixed flexion, that will have to be overcome in order to make the best use of this reverse leverage and of the lengthened foot. I do not have any use for astragalectomy in the case of dangling foot, for that operation is based on shortening of the foot, which I think is contraindicated in such cases.

DR. J. O. WALLACE, Pittsburgh: I have done a number of astragalectomies, and have obtained very good results with them. The type of operation to be performed depends on who is doing it. One sees a great many Whitman astragalectomies that are not done properly. Simply taking the astragalus out without putting the foot backward is not astragalectomy according to Whitman. There are certain types of cases in which I believe astragalectomy is better than

the Davis operation. When a great deal of bone must be removed to get the foot back, an astragalectomy is an easier operation than a Davis, although by taking enough bone out, the Davis operation will accomplish the same results. I have been doing an open operation, the horizontal transverse section. I make an incision on both sides of the ankle down through the periosteum, and free the ligaments from the side and the back, and sometimes from the front. I try to get some bone with the ligamentous structure and the periosteum, so that when I push the foot back I will have bone formation. I have done some of the Hoke operations; they are all right, but if there is any lateral instability of the ankle joint itself, then I do not think that Hoke's operation is as good as the others. With the method I use, a lateral stability of the ankle joint results. With the Davis operation there is an excellent end-result for a dangle foot.

DR. WILLIS C. CAMPBELL, Memphis: The operation of Davis is today obsolete, though his principles are the basis of the refined procedures universally employed by the orthopedic surgeon. These consist of an arthrodesis of the astragaloscaphoid, the calcaneocuboid and the subastragalar joints—a triple arthrodesis followed by the backward displacement of the foot. As Dr. Gill has said, this backward displacement is not accomplished unless the malleoli are freed from ligamentous attachment. Simply removing a wedge of bone from the forefoot only gives an apparent backward displacement, which is a delusion. It is most important to secure solid bony fusion at all points. In making roentgenograms of feet in which my bone block operation for drop-foot was employed in conjunction with triple arthrodesis, I have had ample opportunity to observe the end-results in this respect, and am now making routine roentgenograms in all cases to determine when osseous union occurs. This has been found of practical value as a guide to after-treatment. If union has not taken place by the end of eight weeks, support by a plaster cast should be continued, as in the treatment of delayed union of fractures. In those cases in which union does not occur, pain is a frequent symptom, and further operative measures, as an osteoperiosteal graft, may be required to induce union. Recently I tabulated statistics of the roentgen-ray observation in eighty-five out of 207 cases. Fusion was obtained in a very high percentage, and to about the same degree in children as in adults. Triple arthrodesis with backward displacement cannot be depended on to control drop-foot or plantar flexion, for which the bone bloc is required, as previously mentioned. I have employed the anterior bloc to prevent dorsiflexion in calcaneus, but do not believe that it is possible to secure a mass of bone of sufficient height without causing an unsightly appearance on the dorsum of the foot. Furthermore, if placed in equinus, backward displacement of the foot is usually sufficient without additional measures. Dr. Gill mentions one case of subastragalar arthrodesis in Chopart's amputation. The application of this method to such a condition is a new departure and may in the future make possible conservation of the ankle joint and lower leg, as Chopart's amputation has not in the past given satisfactory results.

DR. FRANK R. OBER, Boston: Four years ago I saw Putti doing an anterior block in the astragalus for a calcaneus. I disagree with Dr. Gill on the question of calcaneus. I have several times tried to do a Steindler operation for cavus and those cases have recurred. In combination with Steindler's method I have tried arthrodesis of the midtarsal articulations and those cases recurred. Cavus of the foot is usually due to paralysis of the gastrocnemius, normal power being present in the peroneus longus, the posterior tibial and the long toe extensors. A cavus will not disappear until those muscles are transplanted. Finally, I have come to do the Hoke operation in those cases of cavus in which there is a normal power in the tarsal muscle group. If we do this, the toes become flexed and are straight on the floor in walking. I find it of advantage to have a little instability in the true ankle joint, that is, between the astragalus and the fibula and tibia, because such patients are then a little more comfortable when walking on slanting sidewalks.

DR. A. BRUCE GILL, Philadelphia: I have tried to modify the Davis horizontal transverse section so that we may take advantage of all three methods of correcting talipes calcaneus, in order that the operation may be done by any surgeon whether he has had previous experience with the Davis operation or not. As to the correction of talipes cavus, it seems to me that the only reliable means we have for obtaining this is by fusion of the midtarsal joint. If we accept the fusion principle for correction of other deformities of the foot, why not for cavus also? I appreciate Dr. Campbell's remarks in reference to Dr. G. G. Davis. While we may no longer do these operations by the technic employed by Dr. Davis, we should not forget that we are guided by the principles that he outlined.

AN UNAPPRECIATED FUNGICIDAL ACTION OF CERTAIN VOLATILE OILS*

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Infections occurring chiefly on the hands of employees of fruit canneries in the Pacific Northwest proved to be due to a yeastlike organism. This organism has been described by Kingery and Thienes.[1] The antiseptics commonly employed in treating infections of bacterial origin proved quite unsatisfactory in attempting to combat the lesions produced by this organism. Recalling the use of cinnamon water to prevent mold growth in the infusion of digitalis and compound chalk mixture, I painted a dilute alcoholic solution of cinnamon oil on one of the lesions produced by this yeast.[2] Almost immediate relief of the disagreeable subjective symptoms occurred, followed by rapid healing of the infection. Further use of this oil in dilute solution proved it to be most effective, without fail, in making the infections yeast free and producing rapid healing.

TABLE 1.—*Toxicity of Certain Volatile Oils Toward Yeast 1*

Name of Aqua	Minutes Required to Destroy Yeast *												24 Hours
	1	5	10	20	30	40	50	60	70	80	90	120	
Thymol	—	..	..	..	..	..	..	..	..	..	..	..	..
Carvacrol	—	..	..	..	..	..	..	..	..	..	..	..	..
Mustard	+	+	±	—	..	..	..	..	..	..	..	..	..
Cinnamon	+	+	+	+	±	—	..	..	..	..	..	..	..
Clove	+	+	+	+	+	+	+	+	+	±	—	..	..
Turpentine	+	+	+	+	+	+	+	+	+	+	+	+	—
Eucalyptol	+	+	+	+	+	+	+	+	+	+	+	+	—
Eugenol	+	+	+	+	+	+	+	+	+	+	+	+	—
Camphor	+	+	+	+	+	+	+	+	+	+	+	+	—
Menthol	+	+	+	+	+	+	+	+	+	+	+	+	—
Peppermint	+	+	+	+	+	+	+	+	+	+	+	+	—
Methyl salicylate	+	+	+	+	+	+	+	+	+	+	+	+	—
Anise	+	+	+	+	+	+	+	+	+	+	+	+	—
Thyme	+	+	+	+	+	+	+	+	+	+	+	+	+
Cedar leaf	+	+	+	+	+	+	+	+	+	+	+	+	+
Cedar wood	+	+	+	+	+	+	+	+	+	+	+	+	+
Cajaput	+	+	+	+	+	+	+	+	+	+	+	+	+
Bergamot	+	+	+	+	+	+	+	+	+	+	+	+	+
Origanum	+	+	+	+	+	+	+	+	+	+	+	+	+
Apiol	+	+	+	+	+	+	+	+	+	+	+	+	+
Lemon	+	+	+	+	+	+	+	+	+	+	+	+	+
Phenol, 1 per cent	+	+	+	+	+	+	—	..	..	..	..	..	..

* The + sign indicates growth; —, no growth; ± indicates feeble growth in minority of cultures, majority sterile.

In order to determine whether this most pronounced fungicidal action is possessed by a large number of

* From the Department of Pharmacology, University of Oregon Medical School.

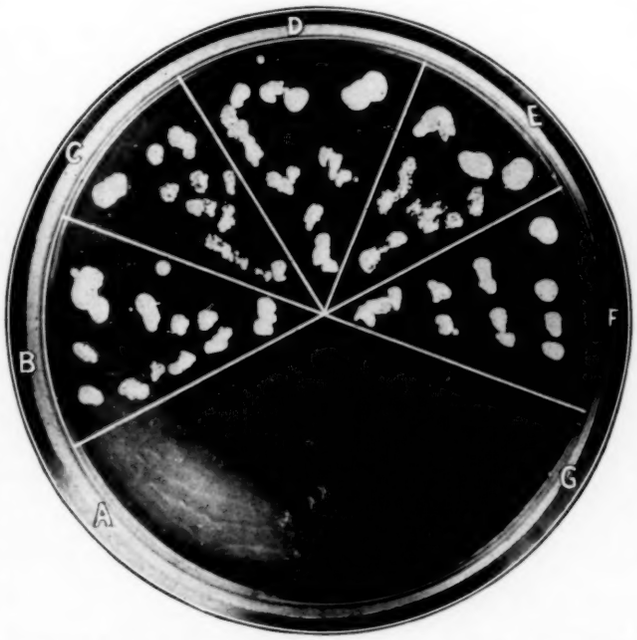
1. Kingery, L. B., and Thienes, C. H.: Mycotic Paronychia and Dermatitis, Arch. Dermat. & Syph. **11**: 186 (Feb.) 1925.

2. Myers, H. B., and Thienes, C. H.: The Fungicidal Activity of Certain Volatile Oils and Stearoptens, J. A. M. A. **84**: 1985 (June 27) 1925.

the volatile oils, cultural tests were made with the yeast isolated from the infections produced in the fruit handlers (referred to as yeast 1). The results of these cultural tests are presented in table 1.

It will be seen, from the results indicated in table 1, that considerable variation exists in the fungicidal activity of the more commonly used volatile oils. This is illustrated in the accompanying illustration, a typical Petri plate growth on Sabouraud's medium. It is interesting to note that the comparative bactericidal efficiency of the various volatile oils, as determined by Kobert,[3] Bruning[4] and others, does not correspond to the fungicidal activity of these oils. Extremes of fungicidal power were evidenced by thymol (and its isomer, carvacrol) and oil of lemon. A saturated aqueous solution of the former killed the yeast in less than fifty seconds, while the growth in a saturated aqueous solution of the latter was almost as luxuriant at the end of three days as that in culture mediums.

The next question naturally presenting itself was, Does the fungicidal action of the more effective volatile oils, as found with the yeast producing so-called fruit poisoning, apply in comparatively equal efficiency toward other yeasts and yeastlike organisms? Nine additional yeastlike organisms were isolated from infections in man, two from pulmonary infections, two from infections of the tongue and buccal mucosa, one from a patient with actinomycotic infection, one from a lesion involving the finger nails and immediately surrounding soft tissue, and the remainder from cutaneous ulcerations. It might be remarked that each of the infections referred to, following the institution of volatile oil therapy, quickly became yeast-negative and rapidly improved, remaining apparently cured to date. The fungicidal activity of thymol and the oils of cinnamon and clove on the yeastlike organisms isolated from the infections mentioned is presented in table 2. Oil of mustard was not used, since its local irritant properties preclude its therapeutic application.



Comparative fungicidal action of the aquae of thymol and certain volatile oils toward yeast 1: *A*, control; *B*, camphor, 160 minutes; *C*, menthol, 160 minutes; *D*, methyl salicylate, 160 minutes; *E*, eucalyptol, 160 minutes; *F*, anise, 160 minutes; *G*, thymol, one minute.

TABLE 2.—*Toxicity of Thymol, Cinnamon and Clove Aquae Toward Certain Yeasts*

Yeast No.	Source	Minutes Required for Destruction by Aquae of		
		Thymol	Cinnamon Oil	Clove Oil
2	Forearm ulcer.....	1	30	55
3	Bronchial casts.....	1	30	50
4	Buccal mucosa.....	1	25	50
5	Ulcer of ankle.....	1	30	60
6	Vesicles of sole.....	1	25	50
8	Mucosa of tongue....	1	25	50
10	Sputum (left lobar consolidation)	1	25	45
11	Finger nail	1	25	50
12	Actinomycosis	1	several hours	several hours

The results of cultural tests, shown in table 2, indicate a similar comparative toxicity of thymol and the oils of clove and cinnamon on the organisms tested, to that evidenced on the fruit yeast, with the exception of *actinomyces*. The latter proved resistant to cinnamon and clove aquae, though readily susceptible to the thymol aqua.

THE MINIMAL EFFECTIVE FUNGICIDAL STRENGTH OF THYMOL

The aqua of thymol was added in varying percentages to beef extract broth containing 2 per cent dextrose, inoculated with 0.1 cc. of broth cultures of yeasts 1, 4 and 10. It required 7 per cent thymol aqua to prevent growth of yeast 4; 8 per cent aqua to prevent growth of yeast 10, and 10 per cent thymol aqua to inhibit yeast 1. The original "fruit-poisoning" yeast was therefore one of the most resistant strains toward thymol. Luxuriant growth occurred in culture tubes containing 70 per cent of the fungistatic amount of thymol.

LACK OF DEVELOPMENT OF TOLERATION

Cultures of yeasts 1, 4 and 10, grown for one month in the presence of 50 per cent of the fungistatic concentration of thymol, clove and cinnamon, did not exhibit any degree of fastness or toleration toward the aquae of these oils. This finding is in contrast to the fastness developed by bacteria toward the more commonly employed bactericides, as recently reported by Meader and Feirer[5] and others.

SUGGESTIONS REGARDING THERAPEUTIC USE

Powdered thymol in capsule, by mouth, is apparently absorbed and circulated in sufficient strength to have pronounced fungicidal action, judging from cultural results, aided by roentgen-ray and physical observations in two patients with pulmonary moniliosis and one with actinomycosis.

Localized superficial mycotic infections may be treated with solutions of the oils and thymol in alcohol, ether or olive oil, in strength according to local irritability of the tissue.

SUMMARY

Cultural results with a yeast producing typical lesions in fruit handlers indicate marked fungicidal activity by thymol, its isomer carvacrol, and the volatile oils of mustard, cinnamon and clove. Thymol and the oils of cinnamon and clove proved equally fungicidal toward other yeasts of apparent pathogenicity. Thymol, but not the oils, proved equally destructive to *Actinomyces hominis*. Solutions of 70 per cent fungicidal strength are not effective in restraining growth of yeast. Tol-

3. Kobert, R.: Schimmel's Reports for October, 1906.
4. Bruning, C.: Centralbl. f. inn. Med. **27**: 14, 1906.
5. Meader, P. D., and Feirer, W. A.: Drug Fastness in Its Relation to the Resistance of Certain Organisms Toward Familiar Germicides, J. Infect. Dis. **39**: 237 (Sept.) 1926.

eration or fastness is apparently not developed by yeast toward these oils. A few observations of therapeutic use support the cultural results.

CONCLUSIONS

1. Thymol, carvacrol and the volatile oils of mustard, cinnamon and clove possess marked fungicidal powers.
2. The remainder of a large group of the more commonly used volatile oils are comparatively inactive toward the yeasts.
3. Therapeutic trial of thymol and the oils of cinnamon and clove in treating mycotic infection seems warranted.

NONROTATION OF THE STOMACH SIMULATING SPONTANEOUS HYDROPNEUMOTHORAX

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Although heterotaxia or transposition of the viscera has been known since 1643, when Petrus Severimus [1] reported one of the earliest authentic cases, failure of rotation of the stomach, which Nau prefers to designate as "incomplete embryonic diaphragmatic hernia," is very exceptional. In the latter type of case the stomach is situated above the liver.

Several excellent contributions have been made on the subject of heterotaxia. Gruber,[2] in 1865, collected seventy-nine instances, and Kuchenmeister,[3] in 1893, increased the number of known cases to 149. Price,[4] in 1895, reported 190 cases from the literature, and Arneille [5] brought up the total to 254 in 1902. With the advent of the roentgen ray, the number of authentic instances of transposition of the viscera has grown prodigiously.

On the other hand, there is a great paucity in the report of cases of nonrotation of the stomach. Poillard,[6] in 1903, gathered sixteen cases from the literature and only two of these occurred on the right side. Griffin,[6] in 1912, reported one such instance, and Kinney [7] was unable to find another case until 1920. Buis,[8] in 1925, reported a case of transposition of the stomach in a boy of 15, but his was not an instance of true "embryonic diaphragmatic hernia" as the stomach was situated below the liver. It seems, therefore, that the case which is the subject of this report is apparently one of very rare occurrence, as it shows nonrotation of the stomach which is situated above the liver, the latter organ and the spleen remaining in their normal position.

It is our purpose to call attention to the fact that nonrotation of the stomach, particularly when combined with an eventration of the right diaphragm, strongly simulates and may be easily confounded with a spontaneous hydropneumothorax or pyopneumothorax localized at the base of the right lung. Rare though the condition may be, it should be thought of before a diagnostic puncture or aspiration is attempted.

1. Severimus, Petrus, quoted by Upson, W. O.: Transposition of the Viscera, Am. J. Roentgenol. **8**: 385 (July) 1921.
2. Gruber: Arch. f. anat. & phys. wissensch. Med., Leipzig, 1865, p. 570.
3. Kuchenmeister: Die angeborene volstandige Verlagerung der Eingeweide des Menschen, Leipzig, 1893.
4. Price: Province méd., 1895.
5. Arneille, J. R.: Clinical Observation on Congenital and Acquired Transposition of the Viscera, Am. J. M. Sc. **124**: 885, 1902.
6. Cited by Kinney (footnote 7).
7. Kinney, L. C.: Congenital Nonrotation of Stomach, Am. J. Roentgenol. **8**: 383 (July) 1921.
8. Buis, John: Transposition of the Stomach, Nebraska M. J. **10**: 26 (Jan.) 1925.

REPORT OF CASE

V. B., aged 22, a salesman, whose family and previous personal history were irrelevant, stated that he had been in good health until the onset of the present illness. At the onset he was seized with diarrhea, severe griping pains in the lower abdomen and tenesmus. Evacuations of the bowel averaged twenty a day for a period of about three weeks and were accompanied by a bloody discharge with mucus. His temperature continued to be moderately elevated and he lost strength and weight so rapidly that a blood transfusion was seriously considered. It was at this time that he came under the care of one of us (L. I. H.). The history of great loss of weight, moderate elevation of temperature and bloody stools, and his emaciation took on special significance when an examination of the chest showed a right-sided hydropneumothorax or pyopneumothorax. However, a sigmoidoscopic examination disclosed numerous simple ulcers of the lower bowel which, after an appropriate dietetic regimen was instituted, were effectively treated with topical applications. The chest signs on physical examination, which during this period were as a rule persistent, disappearing only for short periods, made it seem desirable to secure a complete roentgenologic study to identify fluid in the chest cavity, which seemed apparent on fluoroscopic examination even though the patient had now apparently made a complete recovery. Therefore, four months later the patient was referred for detailed study at one of the clinics of the department of health.

Physicial examination of the chest at this time disclosed slight lagging of the right hemithorax. The lower interspaces on the right were wider than those on the left, and the basal aspect of the right side was more prominent than the opposite side.

There was no diminution in resonance anywhere, but the right basal region was slightly tympanitic. Both leaves of the diaphragm apparently made the normal inspiratory excursion, although the descent of the right leaf could not be well made out anteriorly because of the tympanitic note on percussion. There was definite shifting dulness at the right base anteriorly. The heart was in its normal position.

The respiratory murmur was normal throughout, excepting over the right lower lobe. Here could be heard distant amphoric breathing, whispered pectoriloquy, a definite succussion and a very definite coin sign. There was no metallic tinkle.

While we were inclined to consider the condition at the lower aspect of the right chest as a spontaneous localized hydropneumothorax or pyopneumothorax, particularly since the roentgenogram (fig. 1) disclosed a large air-containing space with a definite fluid level in the region involved, there were a few conditions which militated against this diagnosis.

1. There was no history of trauma, severe exertion, emphysema or active pulmonary tuberculosis, which, while not absolutely indispensable to the diagnosis of spontaneous pneumothorax, is most often present and of great diagnostic significance.

2. The heart was not displaced as it usually is in spontaneous pneumothorax in young adults, particularly when the breath sounds are amphoric in quality.

3. The mobility of the right diaphragm was not impaired, as it most frequently is in cases of long standing hydropneumothorax or pyopneumothorax.

4. There was persistence of the apparent hydropneumothorax in the absence of a bronchopleural fistula.

It seemed, therefore, that we might be dealing with a subdiaphragmatic rather than an intrapleural condition. While we could definitely exclude the existence of a subdiaphragmatic abscess, by the absence of constitutional symptoms and of such pathologic processes as may give rise to this complication, we could not exclude the presence of that rare condition of non-

rotation of the stomach and eventration of the right diaphragm. The patient was therefore given a barium meal, which revealed the true nature of his trouble. Figure 2, taken fifteen minutes after the ingestion of the barium, shows the stomach on the right side below the diaphragm and above the liver. Figure 3, taken six hours later, shows the cecum on the left side.

COMMENT

Here is a case presenting a tympanitic percussion note, shifting dulness, succussion and coin signs, distant amphoric breathing and whispered pectoriloquy at the right basal region—the classic observations in a fairly extensive hydropneumothorax. The roentgenogram is in accord with the usual interpretation of the physical signs here present, and while there was no history of trauma or pulmonary conditions that might lead to spontaneous pneumothorax, the latter complication is seen often enough in apparently healthy persons to warrant a definite diagnosis in spite of a negative history. There were, however, two signs that could not be accounted for if we assumed that our diagnosis was correct: viz., the absence of cardiac displacement and the perfect descent of the diaphragm on the affected side.

With a tympanitic percussion note, amphoric breath sounds and the presence of fluid and air in the chest cavity, in the absence of adhesions (as shown by the roentgen ray), particularly in young persons, we would expect at least a moderate shifting of the mediastinal organs to the opposite side; for it is only in long standing pyopneumothorax with marked pleural thickening and fibrosis that the mediastinal organs are either in their normal position or actually drawn to the affected side. Yet, in the case under consideration, neither the physical nor the roentgen-ray observations disclosed an appreciable shifting of the mediastinal contents to the contralateral side.

The diaphragmatic excursions on the side of a hydropneumothorax or pyopneumothorax are almost invariably markedly restricted and usually absent. This is due to the atony and even semiparesis of the diaphragmatic musculature, caused by the inflammatory changes, the weight of the fluid, the increase in intrapleural tension and the reflex inhibition of the homolateral phrenic nerve. Indeed, paradoxical movements which are most probably due to the effect of the inspiratory increase in intra-abdominal tension on an atonic leaf of the diaphragm are very often noted in such cases. In our case in spite of the presence of all the conditions that inhibit the inspiratory descent of the diaphragm, its respiratory excursions were not in the least diminished both on physical examination and on fluoroscopic observation.

The likelihood that we were dealing with an abdominal condition therefore occurred to us, and the roentgen-ray observations, after a barium meal, firmly established the diagnosis of nonrotation of the stomach and eventration of the right diaphragm.

SUMMARY

1. The similarity of this case of nonrotation of the stomach, or "incomplete embryonic diaphragmatic hernia," on chest roentgen-ray and physical examination to right localized spontaneous hydropneumothorax is significant.

2. The differential diagnosis was made possible by means of a barium meal and subsequent roentgenograms.

3. It is desirable to keep in mind the occurrence of this condition, in cases of apparently spontaneous localized right basal hydropneumothorax, before resorting to aspiration or diagnostic puncture.

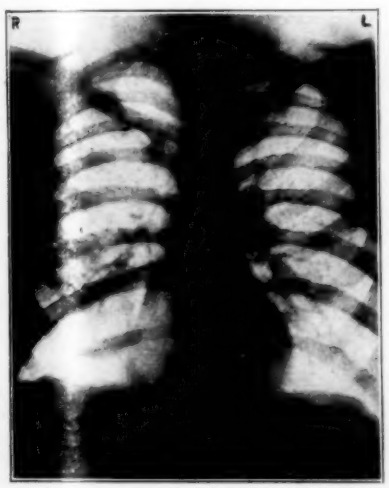

Fig. 1.—Large area of rarefaction at the lower aspect of the right hemithorax with a definite fluid level. This area is clearly demarcated from the pulmonary shadows above by a dense curved line, the eventrated leaf of the diaphragm. The heart is in its normal position.

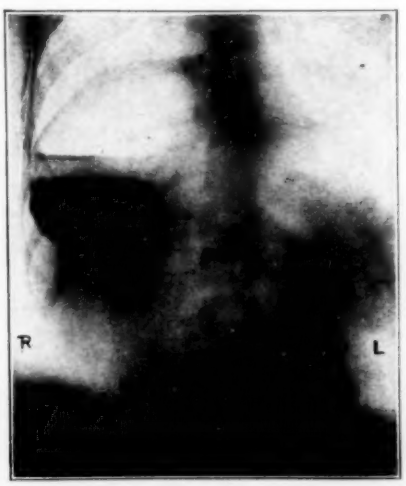

Fig. 2.—Fifteen minutes after the ingestion of a barium meal: Stomach on the right side, above the liver and underneath the diaphragm; heart in its normal position. The shadow of the spleen can be seen on the left.

Fig. 3.—Six hours after the barium meal: Stomach on the right side above the liver and the cecum on the left. The distended colon is to be seen under the left leaf of the diaphragm.

Practitioner and Research.—I hope our future practitioner will be under the influence of the spirit of research. Unless he comes in contact with the research man, he will be too likely to be a hack worker, unfamiliar with the methods of investigation. He will be unable to evaluate that which is new, as it is announced to the medical world. He will take his opinions largely from others. Untrained in criticism of methods of work or habits of thought, he will be too apt to believe implicitly what is printed merely because it is printed or because it emanates from some famous clinician, well advertised clinic or much talked of laboratory. Our clinician must get some of the fire and enthusiasm of these research men in order to live and not merely exist; in order to produce and not merely to do the daily grind.—Herrick, J. B.: *California & West. Med.* **27**:182 (Aug.) 1927.

THE RELATION BETWEEN MENSTRUATION AND OVULATION IN THE MONKEY

ITS POSSIBLE SIGNIFICANCE FOR MAN

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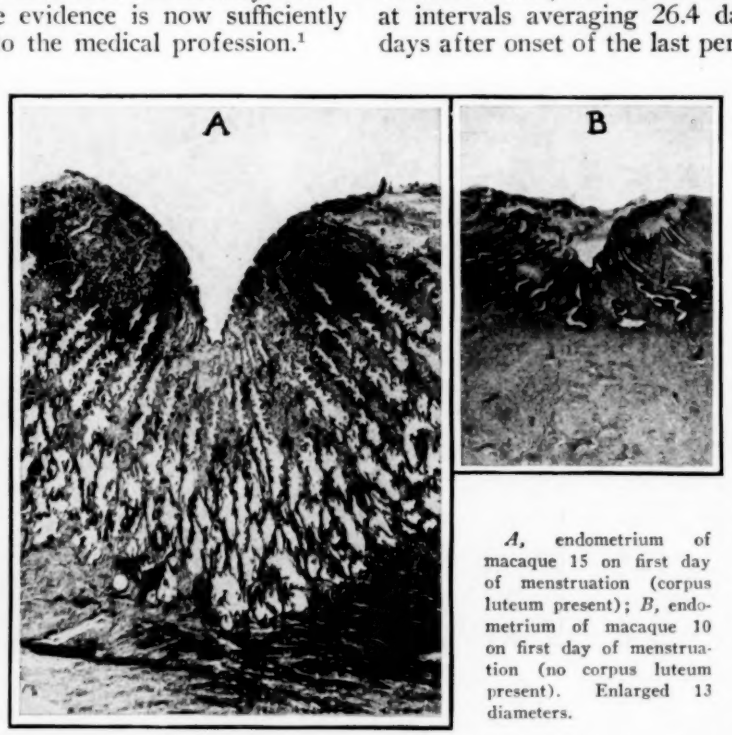
Observations and experiments on the reproductive cycle of one of the common Old World monkeys, *Pithecus (Macacus) rhesus,* which have been in progress during the last six years, have given results which are in some ways quite unexpected and which may necessitate a revision of current ideas about menstruation. These experiments have been necessarily rather few and tedious, but the evidence is now sufficiently definite to be presented to the medical profession.[1]

Females of *Macacus rhesus* exhibit hemorrhages from the genital tract which resemble human menstruation, both in periodicity and in duration. In the animals of my colony the cycles are subject to greater irregularity than in women, but the modal interval is twenty-seven days, and the modal duration five days. It seems proper to call this phenomenon by the name used to describe the at least outwardly similar process in the human species. As used here, therefore, "menstruation," in respect of *Macacus rhesus,* signifies a recurrent hemorrhage from the healthy uterus.



A, endometrium of macaque 15 on first day of menstruation (corpus luteum present); *B,* endometrium of macaque 10 on first day of menstruation (no corpus luteum present). Enlarged 13 diameters.

During recent years general acceptance has been granted a theory of the human reproductive cycle which is based on the work of Fraenkel, Hitchmann and Adler, and a number of clinical workers led by R. Meyer and Schroeder. Investigations made during the same period on laboratory animals have fitted in well with this view.[2] It may be expressed briefly as follows: Ovulation is a periodic function occurring regularly at about the middle of the interval between two menstrual hemorrhages. It is followed by the development of a corpus luteum at the site of the discharged follicle; and this structure, acting as a gland of internal secretion, causes changes in the endometrium (the well known "premenstrual" changes first described by Hitschmann and Adler) by which it is prepared for implantation of the embryo. If the ovum is fertilized, the "premenstrual" endometrium thus becomes the endometrium of early pregnancy. If, however, the ovum is not fertilized, the corpus luteum retrogresses and at about the same time the "premenstrual" endometrium suddenly breaks down with resultant hemorrhage. Menstruation is on this theory merely a violent demolition of the "premenstrual" uterine edifice, some days after the expected tenant (the embryo) fails to arrive. Each menstrual period is therefore necessarily dependent on the occurrence of ovulation about two weeks before.

My earlier observations on *Macacus rhesus,* carried on at Johns Hopkins Medical School from 1921 to 1923, were planned on the basis of a tentative acceptance of the foregoing hypothesis; but the first animal to be examined post mortem contradicted it flatly. This monkey had menstruated twelve times during a year of observation, the last five periods having occurred at intervals averaging 26.4 days. Autopsy seventeen days after onset of the last period and nine days before expected onset of the next did not show (by examination of serial sections of both ovaries) any sign of any recent or impending ovulation; that is, there were no corpora lutea or ripe follicles in either ovary. The next three animals, however, all gave evidence of ovulation about the middle of the interval; in two of them the discharged ova were found, in tube and uterus, respectively. To make this part of the story brief, eleven animals of known menstrual history were examined post mortem in 1922-1923. Five of these fitted in perfectly with the current theory of the human cycle quoted above, and indeed the two of them that were killed presumably within a week after ovulation showed the beginnings of "premenstrual" change in the endometrium, quite like the earlier "premenstrual" stages in the human uterus. The other six monkeys did not show evidence of recent or impending ovulation, although killed at various stages of their menstrual cycles. Of these, one killed on the first day and two on the fourth day of the actual menstrual flow were found to be bleeding from endometria that did not appear to have passed through the "premenstrual" stage at all.

The structure of such an endometrium is shown at *B* in the accompanying illustration.

It was therefore tentatively concluded that in *Macacus rhesus* menstruation may occur without ovulation, but that when ovulation occurs it takes place in definite chronological relation to the menstrual cycle, about twelve to fourteen days before onset of the menstrual flow. As to the progress of the "premenstrual" changes of the endometrium, and the meaning of their apparent absence in many cases, I was left in ignorance, because I did not have a single animal which, when

1. Part of the detailed evidence, with protocols and illustrations, has been published (Corner, G. W.: Ovulation and Menstruation in Macacus Rhesus, Carnegie Inst. Washington, Pub. 332 [Contrib. to Embryol., No. 75] 1923, pp. 75-101, 1923). A second detailed report, in continuation of the first, is now being prepared.

2. A review of this subject, with full references, is given by Corner, G. W.: Oestrus, Ovulation and Menstruation, Physiol. Rev. 3: 457-482 (Oct.) 1923.

killed, was menstruating and at the same time contained a corpus luteum of recent date.

These results were in partial agreement with those of Heape [3] obtained thirty years before, and with the conclusions of van Herwerden [4] drawn from a collection of preserved specimens from the jungle. Since their publication, Allen [5] and Hartman [6] have brought forward a few more records of observations on *Macacus rhesus* which confirm the occurrence of menstruation without ovulation. On the other hand, Prof. Robert Meyer,[7] after a detailed analysis of my protocols of 1923, argues that five of my animals were representative of normal conditions, but that the six which bled without ovulation must have had pathologic uterine hemorrhage.

The experiments next to be described, carried out at the University of Rochester from 1924 to 1927, have been planned to analyze the question of menstruation more fully by direct observation of the ovary in the living animal. A beginning may be made by describing one of the critical experiments:

Macaque 15 was observed through sixteen menstrual cycles; the mean of the last eight intervals was 27.0 days, the extremes 21 and 31 days. May 7, 1926, eighteen days after onset of the last menstrual hemorrhage, exploratory laparotomy revealed the absence of corpora lutea and large follicles. Menstruation began again, May 12, five days after the operation and twenty-three days after onset of the last period; this was a typical flow of five days' duration. Five months later, October 29, seven days after onset of a menstrual period, exploratory laparotomy revealed in the left ovary the well healed crater of a corpus luteum. The right ovary did not contain anything of significance. November 9, at another exploration, the crater in the left ovary was present, though somewhat paler; and there were now two large red craters of recently ruptured follicles in the right ovary. Discharge of two follicles had taken place, therefore, about the middle of the interval, since menstruation began again, November 19, twenty-eight days after onset of the last period and ten days after the most recent exploration.

The animal was killed on the first day of menstruation. Sections of the endometrium (*A* in the illustration) showed a histologic condition exactly comparable to the first day of typical human menstruation.

Taking this observation in connection with those animals of the previous group which ovulated, it is evident that ovulation in *Macacus rhesus* is followed by endometrial changes of the kind known in other mammals and believed to be part of a mechanism to facilitate implantation. The two recent corpora lutea were histologically identical and were in the earliest stage of retrogression, exactly resembling the pig's corpus luteum of the first or second day of degeneration.

This experiment may be compared with another:

Macaque 10 was observed through nine cycles, averaging 29.4 days each; the last three intervals were 26, 31 and 23 days. The menstrual process resembled in all external appearances that of the previously described animal 15. Daily vaginal smears were alike in the two, during the flow as well as the interval. Yet when macaque 10 was killed on the first day of menstruation, her ovaries did not contain any sign of ovulation during the past two or three cycles, and the uterus (*B* in the illustration) exhibited hemorrhage in progress from a low unchanged endometrium of interval type. It should be added that the animal was in perfect health and that at autopsy the body was everywhere normal.

Experience with those animals which ovulated and which were afterward studied microscopically shows that the crater of a corpus luteum and the enlargement of the ovary due to its presence may be followed for not less than six weeks, and probably somewhat longer. This fact gives validity to the following experiments, in which the evidence was obtained by macroscopic examination at operation, without autopsy:

In macaque 18 (*a*) in July, 1926, exploration, done five days before the expected onset of menstruation, did not reveal corpora lutea or large follicles. Menstruation began five days later.

(*b*) In October, 1926, exploration five days before the expected onset did not reveal corpora lutea or large follicles. Menstruation began four days later.

In macaque 19, in May, 1926, exploration on the third day of the menstrual flow did not reveal corpora lutea or large follicles.

In macaque 23, menstruation began, Jan. 5, 1927, after sixty-six days' amenorrhea. At exploration on the first day of menstruation, a very old corpus luteum was found in the left ovary. The second exploration, January 28, did not reveal a new corpus luteum or large follicle; the old corpus seen three weeks before was not certainly visible. Menstruation began, February 1, twenty-seven days after the onset of the last period, and four days after the more recent exploration.

Autopsy since has revealed that macaque 19 was perfectly healthy. The other two are at the present writing living and well.

Those who have been following the experiments are convinced that in the healthy macaques of our colony normal menstruation frequently occurs without ovulation, the term "menstruation" being used in the sense defined above, namely, "recurrent hemorrhage from the healthy uterus." Out of about twenty-seven cycles of which something is definitely known, from autopsy or exploration, ovulation has occurred in seven only. As I interpret the experiments, they indicate that in *Macacus rhesus* menstruation is not dependent on previous ovulation and often takes place from an endometrium that is not the seat of "premenstrual" changes. Histologically there are two types of menstruating endometrium (as shown in the illustration), one showing "premenstrual" changes, the other devoid of them, according to the occurrence or nonoccurrence of ovulation twelve or fourteen days beforehand. That the hemorrhage is one and the same phenomenon under these two different circumstances is of course my own assumption; but at least the burden of proof now seems to be on the other side.

Under this interpretation, the term "premenstrual," as applied to the stage of hypertrophy of the mucosa, with dilatation, spiraling, and crenation of the glands, is misleading unless used to indicate a facultative time-relation only, with the understanding that the changes do not constitute an essential part of the hemorrhagic process. Although the endometrial growth-process is not a necessary prelude to menstruation, it is, on the other hand, apparently a necessary sequence of ovulation, probably through endocrine action of the corpus luteum. It is closely similar to changes, of varying complexity, occurring after ovulation in other mammals, which are believed to facilitate implantation of the embryo and have therefore been called "pseudopregnant" or "progestational" changes. To this extent the conditions in *Macacus rhesus* support the currently accepted theory of the human cycle quoted above.

3. Heape, W.: The Menstruation of Semnopithecus Entellus, Phil. Tr. Roy. Soc. London **185 B**: 411-471, 1894; The Menstruation and Ovulation of Macacus Rhesus, etc., ibid. **188 B**: 134-166, 1897.

4. Van Herwerden, M.: Beitrag zur Kenntnis des menstruellen Cyklus, Monatschr. f. Geburtsch. u. Gynäk. **24**: 730-748, 1906.

5. Allen, E.: The Time of Ovulation in the Menstrual Cycle of the Monkey Macacus Rhesus, Proc. Soc. Exper. Biol. & Med. **23**: 381-383 (Feb.) 1926; Further Evidence Concerning the Menstrual Cycle of the Monkey Macacus Rhesus, abstr. Anat. Rec. **35**: 1-2 (March) 1927.

6. Hartman, C.: Menstruation Without Ovulation in Macacus Rhesus: Account of an Experiment, abstr. Anat. Rec. **35**: 13 (March) 1927.

7. Meyer, Robert: Gibt es bei Menschen oder Affen Menstruation ohne Ovulation? Arch. f. Gynäk. **122**: 585-602, 1924.

The cause and meaning of the cyclic hemorrhage remain uncertain. My studies do not as yet disclose any structure in the ovary which may be considered responsible for the menstrual cycle, but the problem requires infinitely more work than has been done. What determines the occasional intrusion of ovulation and the resultant uterine changes into the menstrual cycle is equally obscure. We know only that when in *Macacus rhesus* ovulation takes place, it occurs at such a time that the postovulational changes are immediately followed by a menstrual hemorrhage which would presumably have taken place anyway. Thus far the evidence from my colony does not indicate that ovulation is a seasonal event or is dependent on meteorological conditions or on diet. Van Herwerden's animals, of a closely related species, killed in the jungle, seem to have exhibited the same two types of menstruation as those of my artificially maintained colony. I have also some evidence, not as yet complete, that ovulation is not determined by sexual relations. It is possible that menstrual cycles without ovulation are a phenomenon of youth, but experiments designed to test this question will require five years or more for completion.

Macacus rhesus is the highest animal in which the reproductive cycle has been investigated experimentally. Its similarity to man in so many respects, including the occurrence of menstruation, inevitably suggests a comparison of its cycle with that of our own species. We are so badly in need of more information about the human reproductive cycle that no clue should be neglected, and therefore I put forward the following hypothetic suggestions:

It seems possible that in man, as in the macaque, menstrual cycles may occur without ovulation. Many gynecologists, including especially Leopold [8] and Tait,[9] and in recent years Schickelé [10] and Henry,[11] have interpreted their specimens from the operating room to indicate that menstruation and ovulation are entirely independent or disconnected phenomena; but their specimens, coming from cases of pelvic disease, have not been sufficiently convincing to withstand the newer theory outlined here. What is needed is a series of specimens of ovaries and uteri, obtained from women of known menstrual history, free of pelvic disease, who have died by accident or by sudden illness not affecting the cycle. Such material is, of course, very seldom obtained, but in the older literature there are a few cases that bear on the point in question. Leopold examined the ovaries of an unmarried woman, aged 24, who committed suicide on the twenty-second day of the cycle. There was a large follicle in one ovary, but no corpora lutea on either side. One case among a series cited by Jackson [12] seems worth attention: A healthy unmarried woman, aged 28, died from an accidental overdose of morphine four days after the cessation of the menstrual flow. No recent corpora lutea or large follicles were found. In the well known report of J. C. Dalton,[13] a very careful observer, a third case of this sort occurs (case xvii of the series). A young unmarried girl died in a hospital for epileptics after an illness of sixteen hours. Menstruation had been regular, and the last three periods were recorded by the nurse. Death occurred eight days after a verified menstrual period. Neither ovary contained any evidence that rupture of a follicle had ever taken place.

These three cases were, of course, all reported before the day of sound work on other animals, and by men who were not in a position to recognize the various stages of the corpus luteum in detail (as is shown by the inaccuracy of many of their descriptions and conclusions, seen in a modern light); but it is hardly possible that these authors could have failed to see a recent corpus luteum, if present. The following case from my own records is, I believe, reliable, and the history and specimens are preserved for reference (Strong Memorial Hospital of the University of Rochester, Unit No. 4317; Department of Anatomy, Human R3):

A girl, aged 15, who had begun to menstruate at 13, became ill with diphtheria, Nov. 20, 1926. Her menstrual cycles were regular with twenty-eight day intervals. Menstruation began, November 25. The patient was admitted to the hospital, December 3. Menstruation began again, December 23, and was noted on the nurses' chart. The disease, at first mild, gave rise to a diphtheritic paralysis, definitely recognized, December 29. January 8, the condition rather suddenly became critical, and death occurred, January 12. It will be noted that the more severe stage of the disease occurred during an interval of the menstrual cycle, which was not disturbed. After autopsy, the ovaries were divided into slices from 3 to 6 mm. in thickness, some of which were examined microscopically. No large follicles or corpora lutea were found in either ovary, except one corpus fibroticum of long standing. The endometrium was low, of interval type. It seems clear that in this girl one menstrual period, and probably two or more, occurred without ovulation.

A handful of such cases is, of course, not sufficient to upset a widely accepted theory. They are mentioned here merely to call attention to the fact that we know little, after all, of the human cycle, and are still in need of observations unbiased by theoretical conceptions. The query thus raised as to the human cycle, taken in connection with the known state of affairs in *Macacus rhesus*, is of the greatest importance from the standpoint of clinical work on sterility and the disturbances of menstruation. Gynecologists and pathologists, in particular, are urged to collect and report, or place in the hands of those especially qualified, all available complete specimens of the normal ovaries and uterus, accompanied by reliable menstrual histories. The material is so scarce that combined effort will be necessary if progress is to be made.

SUMMARY

From observations described in the foregoing paper, the following tentative conclusions are drawn:

In young mature females of the monkey, *Pithecus (Macacus) rhesus*, menstruation frequently occurs without ovulation, and is therefore not dependent on the presence of a corpus luteum. However, when ovulation occurs, it seems to take place at a definite time, about twelve or fourteen days before the onset of menstruation. Menstruation without ovulation is not preceded by the so-called premenstrual changes of the endometrium, which occur only after formation of the corpus luteum. The cause and meaning of menstruation, in this species, are not at present known. Physicians in a position to obtain human material are urged to gather and study it in the light of these new facts discovered in a related species.

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9. Tait, L.: Note on the Relations of Ovulation and Menstruation, M. Times & Gaz. **1**: 619-624 (May) 1884.
10. Schickelé, Gustave: Etudes sur la fonction des ovaires (ovulation, corps jaune et menstruation), Gynéc. et Obst. **3**: 170-196 (Feb.-March) 1921.
11. Henry, J. R.: Recherches anatomocliniques sur les rapports entre l'évolution du corps jaune et l'apparition des régles (vingt-trois observations), Compt. rend. Soc. de biol. **86**: 1162-1164 (May) 1922.
12. Jackson, A. R.: A Contribution to the Relations of Ovulation and Menstruation, J. A. M. A. **3**: 365-370 (Oct.) 1884.
13. Dalton, J. C.: Report on the Corpus Luteum, Tr. Am. Gynec. Soc. **2**: 111-160, 1877.

FIVE YEARS' APPLICATION OF THE KAHN TEST*

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Since the Kahn test was first announced five years ago, it has been steadily gaining favor as a laboratory aid in the diagnosis of syphilis. In the beginning, the test was regarded as having only academic interest. Later, workers began to consider it a valuable check on the Wassermann test. Still later, especially with greater mastery of technic, many workers began to find the Kahn test the more dependable of the two methods. The result has been that during the past several years the Kahn test has replaced the Wassermann test in a number of laboratories. In this article, an attempt will be made to discuss briefly some of the practical features of the Kahn test, the relationship between the Wassermann and the Kahn test, and the interpretation of the latter.

It is twenty years since the first attempt was made, by Michaelis, to evolve a precipitation method for detecting syphilis. This was followed by a long chain of such methods, some of which, such as the Sachs-Georgi, the Meinicke, the Vernes and the sigma reactions, have gained a certain degree of renown. These reactions were recently summarized in THE JOURNAL.[1]

In this laboratory, the problem of precipitation with syphilitic serum was approached independently of the problem of precipitation with immune serum. It is well known that in the immune precipitation reaction, a specific antigen is employed with immune serum and the resulting precipitate consists largely of globulins, while in the syphilis reaction, an extract of animal tissue is employed as an antigen and the precipitate consists largely of lipoids. Studies soon led to the observation that the precipitation phenomenon in syphilis is governed by factors which do not to the same degree govern the precipitation phenomenon in immunity. These factors are fully discussed elsewhere,[2] and are mentioned here only to indicate that they led to the evolvement of a precipitation method which has many practical features.

PRACTICAL FEATURES OF THE KAHN REACTION

Rapidity.—The Kahn reaction can be completed within an hour from the time the blood is drawn from the patient. It takes about fifteen minutes to separate the serum from the clot by centrifugalization, thirty minutes to heat the serum in a water bath at 56 C., and five minutes to perform the test.

This rapidity in obtaining results is of practical importance to the clinician. It is a frequent occurrence in this laboratory to perform a Kahn test on the blood of a patient while he is waiting in the physician's office, so that he may be given the first treatment if the results confirm the clinical observations. Then, again, this laboratory is frequently called on to perform Kahn tests on the blood of donors in blood transfusion and also on patients undergoing emergency surgical operations.

Simplicity.—The relative simplicity of the Kahn test has been overemphasized. Unlike the Wassermann test, it does not use complement, amboceptor and corpuscles, is free from the necessity of incubation, and has no complicated steps. In other words, it is simpler than the Wassermann test, but not simple in the sense that any one can perform it. The Kahn test should be performed only by properly trained laboratory workers. The worker who can make correct bacteriologic or chemical examinations of the blood should without difficulty be able to make correct Kahn examinations.

Availability.—Because of the complexity of the Wassermann test, its use is limited to medical centers. The result is that in the greater part of the world physicians are without a blood test for syphilis. Even in our own large hospitals in which the Wassermann test is used, it is performed once, twice or three times a week. The Kahn test can be readily performed daily everywhere in the world with the same degree of accuracy. There are no unstable reagents to standardize daily. Antigen, the one reagent required aside from the patient's serum and physiologic sodium chloride solution, is a stable product, and after its initial standardization does not deteriorate or change in titer.

Dependability.—The specificity and sensitiveness of the Kahn reaction will be considered elsewhere in this article. Here, I desire to emphasize its technical dependability. The nature of the Kahn test is such that it is relatively free from sources of error. No reagents need be set aside in the icebox or incubator at any time during its performance. In other words, there is no technical detail which is removed from the observance of the worker for any length of time. The result is that the Kahn test possesses a high degree of reliability as a technical method.

Procedures of the Kahn Reaction.—The Kahn reaction, furthermore, is not limited to a single serum method but embraces a series of procedures, each capable of giving clinicians special aid in the diagnosis and treatment of syphilis. Thus far, most discussions of the Kahn test have been limited to the routine or diagnostic serum procedure. This procedure is conservative in sensitiveness and yet is more sensitive than most Wassermann methods, especially in early primary and in treated cases.

The quantitative procedure expresses the potency of serum in terms of syphilitic reacting units. The blood of a patient before treatment may show 320 units; at the end of the first course of treatment, 200 units, and at the end of the second and third course, 120 and 40 units, respectively. The regular or routine Kahn test in all these examinations would be four plus, and thus would give no indication as to the serologic effect of the treatment. This procedure, therefore, is an important serologic guide in therapy.

The presumptive procedure is somewhat more sensitive than the routine test, and is of value in isolated cases in which this test is negative and in which the clinical syndrome suggests syphilis.

The qualitative and quantitative spinal fluid procedures are applicable to the diagnosis and treatment of neurosyphilis.

The microprocedures are employed whenever insufficient serum or spinal fluid is obtainable for regular tests. When available, fluid from a chancre or from other syphilitic lesions may also be used in performing the Kahn test.

It is obvious that the utilization by clinicians of these various procedures would give them more aid in the diagnosis and treatment of syphilis than they have had heretofore.

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* From the Bureau of Laboratories, Michigan Department of Health.
* Read before the Section on Pathology and Physiology at the Seventy-Eighth Annual Session of the American Medical Association, Washington, D. C., May 18, 1927.

1. Precipitation Tests in the Diagnosis of Syphilis, editorial, J. A. M. A. 88: 1714 (May 28) 1927.

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RELATIONSHIP BETWEEN KAHN AND WASSERMANN REACTIONS

It is important that the relationship between the Wassermann and Kahn reactions be understood. The two reactions have this in common: they both require the mixing of the patient's serum with some specially prepared extract antigen. This completes the Kahn reaction; syphilitic serum will show a precipitate which is readily visible, and nonsyphilitic serum will not show any precipitate. In the case of the Wassermann reaction, however, the interreaction between serum and antigen is not visible. To render it visible, a special indicator is employed. This indicator, developed by Bordet and Gengou, is known as the hemolytic system and consists of freshly washed corpuscles, usually from the sheep, freshly obtained guinea-pig serum (complement) and immune rabbit serum. This hemolytic system, properly added to the mixture of syphilitic serum and antigen, prevents hemolysis of the sheep corpuscles, whereas in the case of nonsyphilitic serum, hemolysis is not prevented.

It was recently shown in this laboratory that by properly adding the hemolytic system to completed Kahn tests, it is possible to read Wassermann results. In more than 1,800 such combined Kahn-Wassermann tests, there was relative agreement between the original Kahn results and the final Wassermann results in 98 per cent of cases. The 2 per cent disagreement is undoubtedly due to our incomplete knowledge of the fundamentals of the two tests.

The Kahn and Wassermann reactions unquestionably detect the same reagin in the blood of syphilitic patients. The differences between the two methods are of a technical character. In one case, the interreaction between serum and antigen, being readily visible, is read directly. In the other, this interreaction not being visible, a special indicator is added to make possible the reading of the results. These differences, however, affect the specificity and sensitiveness of the two methods.

Specificity.—Falsely positive reactions in the Wassermann test are not due in most cases to the nature of the interreaction between serum and antigen, but to factors affecting the hemolytic system. Thus, positive reactions in this test result from the disappearance or "fixation" of complement. However, false fixation of complement might result from a number of causes, such as improper adjustment of the hemolytic system or partial deterioration of complement. This explains why falsely positive Wassermann reactions are relatively frequent. The Kahn reaction, being free from the use of the hemolytic system, is to that extent free from false reactions. This does not mean that the Kahn reaction is "absolutely" specific for syphilis. There is nothing that is "absolute," especially in the realm of biology. All that can be said is that the test is highly specific for syphilis. In more than 150,000 Kahn tests which this laboratory reported to Michigan physicians without having made a corresponding Wassermann test, the question of specificity was raised in less than half a dozen cases, and in these, syphilis was not absolutely eliminated.

Sensitiveness.—The Kahn reaction is more sensitive than most Wassermann methods. This is especially true in early primary and in treated cases. The reason for this increased sensitiveness also lies in the technical differences between the two methods. Thus, in the Wassermann test, after determining by titration some arbitrary "unit" of complement to employ in the test, a relatively excessive amount, such as two units, is used for "safety" against false reactions. The result is that any syphilitic serum-antigen mixture sufficiently potent to combine with one unit of complement would, in most cases, not show a positive reading, the reason being that the remaining uncombined unit of complement would be ample to render the reaction negative. In the case of the Kahn reaction, however, the potency of each serum is measured directly by the formation of a precipitate, and the test is free from the influence of extraneous and unstable reagents.

INTERPRETATION OF KAHN REACTIONS

From what has already been said, it is clear that the differences between the Kahn and Wassermann tests are limited to technical phases, the two tests detecting the same reagin in the patient's blood. Therefore, Kahn reactions should be interpreted in the same manner as Wassermann reactions. It is true that the results of these two reactions are not always identical in any group of cases. Since, however, no two Wassermann reactions give identical results, it is not to be expected that the Kahn test would show complete agreement with any one Wassermann test.

Unfortunately, the Wassermann reaction is frequently not correctly interpreted. Perhaps because of the vagueness and mystery which surround the test, the results are accepted with a marked degree of finality, a positive reaction being interpreted as proof of the presence of syphilis and a negative reaction being interpreted as indicative of the absence of syphilis. This, as is well known, has led to serious errors in the diagnosis and treatment of syphilis.

With the advent of a new test, it should be possible to establish its interpretation in such a manner as to eliminate or reduce to a minimum such errors in diagnosis or treatment as have accompanied the Wassermann test. The following interpretation scheme is suggested for the Kahn reaction:

A positive (++++, +++ or ++) Kahn reaction for diagnosis should be taken as strong probability of syphilitic infection. A very weak (+ or ±) reaction should be taken as a lesser probability. This probability in both types of reactions becomes certainty in the presence of clinical evidence of syphilis or of a history of infection. In the absence of these, clinical opinion must be the final criterion. Many factors are to be considered in such cases: the exposure of the patient to infection, the nature of the ailments, especially as to their response to nonsyphilitic therapy, the age of the patient, and the health of the mate and offspring, if any. In other words, every possible clue corroborative of the positive serologic reaction should be investigated. In some cases, a therapeutic test might be justified. In other cases, when no ailments are present the patient might be told of the probability of syphilitic infection, and either kept under observation or given treatment if treatment is indicated by careful clinical judgment.

The interpretation of positive Kahn reactions in patients undergoing treatment also requires careful consideration of each case by clinicians. Many believe that treatment should be continued until the serologic reaction becomes negative. Others (Wile) insist that with intensive therapy, the clinical condition of the patient should be the true guide and not the serologic reaction. Obviously, it is possible to harm patients seriously by overtreatment if a "serologic cure" is insisted on in every case.

A negative Kahn reaction, whether in diagnosis or in treatment, also requires careful clinical consideration. In isolated cases, syphilitic infection might exist and treatment be indicated in spite of the negative reaction.

When a laboratory report is accepted as the criterion in the diagnosis and treatment of any disease, with little regard for clinical manifestations, serious errors are bound to occur. Even if it is assumed that the Kahn test will be performed only by well trained workers, it is probable, on the basis of the law of averages, that about 10 per cent of these will not do work of the highest reliability. The clinician's acceptance of laboratory reports on the Kahn test as final must therefore lead to error. This applies to reports of all other laboratory methods in the realm of medicine. The reports should be used as aids in making diagnosis; they should never supplant a careful clinical investigation of each case.

SUMMARY

The steady gain in favor of the Kahn test among clinicians during the last five years is believed to be due to its several practical features. Aside from the marked specificity and sensitiveness of the test, it is rapid in performance; it is relatively simple; it is available everywhere in the world; it is relatively free from sources of error, and it offers a series of procedures each of which can give clinicians special aid in the diagnosis and treatment of syphilis.

The major difference between the Kahn and Wassermann tests is that in the former the interreaction between syphilitic serum and antigen is of such character that the end-result is readily visible, while in the Wassermann test, as the end-result is invisible, a special indicator is employed in the form of the hemolytic system which renders the final reaction visible. The two tests unquestionably detect the same reagin in syphilitic serum, and occasional differences in their results are most likely due to technical details.

The Kahn reaction should be used as an aid in the diagnosis and treatment of syphilis. The test cannot supplant the necessity for clinical study. Syphilis, especially, demands the most painstaking observation of each patient by clinicians, and the most careful performance of each test by laboratory workers.

ABSTRACT OF DISCUSSION

DR. R. R. GASSER, Washington, D. C.: Since the Kahn test became the standard method for the serum diagnosis of syphilis in the U. S. Navy in December, 1925, more than 6,000 tests have been made at the U. S. Naval Medical School. What has impressed us especially is the specificity of this reaction. There is a record of two nonsyphilitic cases, one of chickenpox and one of mumps, in which the Kahn and Wassermann reactions were both positive, and in which both reactions became negative with the disappearance of the acute disease. Aside from these cases, we have not had a known case in which the Kahn reaction was positive in a nonsyphilitic patient. It is not uncommon to obtain positive Kahn tests in cases in which "syphilis denied" is written on the history blank; in these cases the presence of syphilis is established either by a later admission on the part of the patient or by a therapeutic test. So-called false negative reactions we found of such rare occurrence that they have caused no trouble whatever in our work. What has proved to be an especially stimulating source of interest in connection with our work on the Kahn test is the utilization of the quantitative Kahn reaction. Again and again, clinicians will come to the laboratory stating that they have given a number of courses of treatment in a given case without altering the Kahn reaction. In such a case, it is usually found that the quantitative reaction may have been 600 Kahn units at the beginning of treatment and, perhaps, 40 units at the end of the last treatment. While the routine test, therefore, gave no indication in such a case as to the serologic effect of treatment, the quantitative reaction was reduced from 600 to 40 Kahn units. We believe that as clinicians learn the value of the quantitative Kahn reaction, they will utilize it in every case of syphilis under treatment.

DR. O. B. HUNTER, Washington, D. C.: For a number of years we have been using a Wassermann test with an ox hemolytic system as originally devised by Dr. Lyon. In this system we use two antigens, one a cholesterinized and the other an acetone insoluble antigen. These antigens with our special hemolytic system have developed a very high degree of specificity, particularly in detecting weakly positive cases of primary and tertiary syphilis. Some years ago we attempted a number of precipitation tests suggested by several workers, including the original Kahn reaction. Our results were not satisfactory. Naturally, we were prejudiced against all precipitation tests, but with the advent of the new precipitation test by Kahn, we tried it out. Since that time we have been very much pleased with the reaction. From the time of our last communication on the Kahn test, we have used it in about 5,000 cases, and we still find no reason to discard the Kahn test. In fact, the specificity of the Kahn test seems to be somewhat superior to the Wassermann reaction, as we use it. Recently we started a study on the Kahn test with relation to the Wassermann reaction in the early primary lesions of syphilis. All primary lesions diagnosed by darkfield examination are checked up by the Wassermann reaction, using two antigens, and the Kahn test. Of 113 patients studied in this manner, eighty-two gave a positive darkfield reaction; and of these, forty-seven gave a positive Kahn and twenty-three a positive Wassermann reaction. Of these forty-seven positive Kahn tests, seventeen were strongly positive, giving at least a four plus reaction, and three were weakly positive, somewhere between one plus and three plus. Of the Wassermann reactions, thirteen were weakly positive, somewhere below the four plus reaction, and ten were four plus. From these and previous studies, we are strongly in favor of the Kahn reaction as a diagnostic agent in syphilis, notwithstanding the fact that we were considerably prejudiced against this test when we first started its use.

DR. FRANK W. HARTMAN, Detroit: We tried the Kahn test, making about 850 tests, and found it about 15 per cent less sensitive than the Kolmer test. On that basis, we gave it up. About eighteen months ago we tried the test again, and have run 10,000 tests parallel with the quantitative Kolmer test and with the cholesterinized antigen. In these 10,000 cases we find a discrepancy of from 3 to 5 per cent. In the opinion of our syphilologist the Kahn test is less specific than the Kolmer test. I feel that it is unfair to speak of the Wassermann test without describing the technic. Unless we know the type of antigen used by Dr. Kahn in his large series, and the various modifications that he made in the fixation, whether icebox or water bath, we do not feel that we can accept it. The Kahn test is, perhaps, more difficult to read than the Wassermann test, especially with the Kolmer technic. I have had two workers from Dr. Kahn's laboratory with me during the last eighteen months. One young woman had a high vision and she could read positive test tubes that none of the other workers in the laboratory could read. She got a little better percentage than the rest of us. We are now reporting both the Kahn and the Wassermann reactions. We feel that it is an excellent check on the clinical condition of the patient, and that the ideal combination is to run the two tests parallel. Dr. Kahn said that he had never recommended that his test be used alone, and that is exactly the way we feel about it. If it is used in conjunction with other tests to confirm or support clinical history, then it is ideal.

DR. FRED BERRY, Columbus, Ohio: Our experience with the Kahn test has extended over the past four years. In the beginning we used the earlier Kahn procedure in testing about 1,000 specimens which had previously been found positive by the Wassermann test. In this series the Kahn proved to be less sensitive than our Wassermann test. We did not carry the comparative tests farther with the early Kahn technic. About two years ago we began a comparative study with the

later Kahn procedure in a series which comprised about 15,000 specimens. A report on this series has already been published. As a result of these comparative studies, we adopted the Kahn test to be run as a part of the routine, with the Wassermann test. We have examined more than 10,000 specimens with the Kahn and the Wassermann tests and have found approximately the same percentages as in the series of 15,000 cases, i. e., about 5 per cent complete disagreement. We are largely disregarding the cases in which the tests agree, and are concentrating our attention on the disagreements. We have found within this 5 per cent of disagreements, constituting about 500 cases, a disagreement between the two tests of about 10 per cent in cases under treatment, about 5 per cent in those diagnosed as syphilitic but untreated, and about 1 per cent in those which were presumably nonsyphilitic. It will be our policy to conduct the two tests in parallel series until such time as an intensive study of these cases showing disagreement convinces us that the Kahn or the Wassermann is superior for our work. Our confidence in the Kahn test has increased as a result of our continued experience with it. However, we have encountered certain difficulties, which I am sure every worker will encounter with the test, and this fact convinces us that it is quite unwise to make any sudden change from the Wassermann to the Kahn test, or for any one who has not had a rather wide experience with the Kahn test to report results obtained by it. I am convinced that further experience with the Kahn test will increase the confidence of the individual workers in its value, but I think that we should be very conservative about replacing the Wassermann with this test.

DR. M. W. LYON, JR., South Bend, Ind.: Dr. Kahn said some interesting things in regard to his own test which I think ought to be emphasized. One is that it takes a trained serologist to interpret it. Another is that he thought that the substance which produced the precipitation was the same substance that produced the complement fixation. There are some authors who have the notion that the Kahn test is not an empiric test. The Kahn test is just as empiric as the Wassermann test, according to Dr. Kahn's own admission. One other thing in regard to the Wassermann test that we ought to bear in mind is its extreme value. All the workers who use the Kahn test recognize the value of the Wassermann test in that they compare the Kahn with the Wassermann reaction. I have yet to see a series of Kahn tests based on independent observation, on clinical histories or on autopsy material to substantiate their correctness. In all cases a comparison has been made of the Kahn test with the Wassermann test. Dr. Kahn is quite right in stating that the clinician is the one responsible for the diagnosis. I have no prejudice against the Kahn test, although I do not use it. I find it difficult to read, but I compromise by using the Kahn antigen in doing the Wassermann test. In my own work, I use four antigens: plain alcoholic extract, acetone-insoluble extract, Kolmer's antigen, and the antigen that Dr. Kahn recommends for the precipitin test. I do the Wassermann test in that way with incubator and icebox fixations. When I get through, I have eight sets of tubes to read on each serum that I am testing. One of the most interesting things to me is the fact that the Kahn antigen is the last one to become negative in the treated cases. I have not tabulated the results in these cases, but according to my recollection the first one to break in treated cases is the plain antigen, not the acetone-insoluble, and then follow the Kolmer and the Kahn antigens. Kahn's antigen is the most sensitive of all the four that I have used, and that I think the chief value of the Kahn reaction is, perhaps, not so much that it is a precipitation test, as that it is based on a very good antigen that Dr. Kahn has carefully worked out. I think that it is an excellent antigen, one of the best and most sensitive that I have known and it is comparatively easy to prepare.

DR. R. A. KILDUFFE, Atlantic City, N. J.: I have been interested in the Kahn test from its initial publication, and have followed it through its various evolutions. I am in entire accord with Dr. Hartman in appreciating the fact that Dr. Kahn has placed his precipitation reactions on a relatively sound basis. I also agree very heartily with Dr. Hartman that it is absolutely useless to talk about comparisons between the Kahn test and the Wassermann test unless we cite definitely the method we use, because the term Wassermann test nowadays is merely a phrase and does not tell us anything about the reliability of the method used. The particular phase of the Kahn test in which I have recently been interested has been the extensive exploitation, or I might say propaganda, which has led to the inference that the Kahn test is a method which is satisfactory as an exclusive test in the serologic diagnosis and study of syphilis. I was extraordinarily interested to hear Dr. Kahn say that this test is not a test which is suitable for the physician to perform in his office. I hope that that expression from Dr. Kahn himself will gain widespread circulation, because it cannot be doubted that a very large number of physicians have the idea that the Kahn technic can be learned in about twenty-five or fifty minutes, possibly an hour, and that they are then competent to do a Kahn test and decide on the diagnosis. I was also glad to hear Dr. Kahn say that the test has its own complexities, as we all know. It does not solve the problem of what happens in the serum in syphilis, and we do not yet know exactly what is the nature of the syphilitic reaction. I am not at all convinced of the necessity for extraordinary rapidity in making the diagnosis. I am convinced that if I had my own serum under examination, a matter of weeks, months or days would not make very much difference to me as long as I felt that the ultimate outcome was relatively certain.

DR. B. S. KLINE, Cleveland: Like the vast majority of workers, we have found the Kahn test a reliable one in the diagnosis of syphilis; this opinion is shared by the head of the department of syphilography at Mount Sinai Hospital, Cleveland. Some years ago we had to face the problem of doing a great many blood typings at Lakeside Hospital, and there evolved a paraffin ring chamber on an open slide. The Vincent principle of doing agglutination, recommended during the war, has been widely tested, and it has been found that accurate and satisfactory agglutination tests may be done on the open slide. For that reason, after learning the Kahn test, we felt that the precipitation test for syphilis might be done more simply on the open slide, particularly in these definite paraffin chambers, which allow of maximum mixture. Since November, 1924, we have been using the slide test along with the Kahn test and two Wassermann tests, and I regret to state that we have come into conflict with some of the principles as laid down by Dr. Kahn. We worked with his antigen and found, probably because of the fact that the open slide radiates more heat than the tubes, that the Kahn antigen is too sensitive to the cold to work well on an open surface, and in order to meet this situation we had to do the slide test in a very warm room and keep all of the ingredients warm. Because of that fact, and because of the fact that a nonspecific granularity frequently develops in the Kahn antigen dilution at low temperatures and is emphasized by magnifying it seventy-five times under the microscope, we have been seeking for an indicator that would allow us to do the slide test at ordinary room temperatures. We found a method of preparing a stable specific and sensitive iodized oil suspension that is not affected by low temperatures as is the Kahn antigen dilution. This iodized oil suspension is stable not only at low temperatures but also from the standpoint of time. It works as well today as it did seven weeks ago. Kahn has focused attention on the precipitation method of detecting the substance in syphilitic serum which many years ago was propounded by Weil as being an antibody to a lipoid substance liberated in the body because of the destructive activity of the spirochete. In 1921, Wassermann, naturally enough perhaps, claimed for his own the aggregate formed by the union of this substance and the lipoidal antigen. He stated that not only would this Wassermann test aggregate fix complement but it would also produce specific precipitation, as in the Meinicke test. It is of the greatest importance to investigate this view because, if correct, it offers serologists not only a good reason for using the simple indicator cholesterin instead of the complicated hemolytic system, but also the hope that by using this simple indicator, it may be possible to work out a single, satisfactory standard test for syphilis.

DR. R. A. KEILTY, Washington, D. C.: Those of us who have been in Wassermann work from the very beginning and have tried all the modifications that have been given have heard some more modifications this morning. I think that the standard Kolmer test is probably the closest to the ideal, but if we are going to use it, we should not vary from what Kolmer has given us. If one cannot make one's own antigen, one should get it from him. When one is using Dr. Kahn's reaction. the technic should not be varied one iota from that recommended by him, and, if possible, his own antigen should be used. My experience has been like Dr. Hartman's in dealing with a large number of routine hospital admissions. As we have improved our technic, the percentage of positive Wassermann reactions has dropped and the percentage of syphilis in the population as a whole at the present time seems to be about 8. One would not consider reporting just the cell count and discarding the Wassermann reaction in spinal fluids. I think the wise solution, at least at this time, is to continue using the Wassermann test, check it with the Kahn reaction, and carefully study the cases showing disagreements.

DR. C. E. RODERICK, Battle Creek, Mich.: Dr. Houghton said that Dr. Kahn has removed the "serologic diagnosis of syphilis from the field of empiricism and placed it on a scientific basis." This has not been done, nor does Dr. Kahn think that. Such statements remain to be proved. The supporters of Dr. Kahn's method should be more conservative of their enthusiastic statements for the good of the method itself. In a series of eighty-nine cases of neurosyphilis in which there had been from one to seven courses of treatment, thirty-seven remained positive with the Kolmer test when the Kahn reaction was negative; five were positive with the Kahn test while the Kolmer test was negative; both tests were positive in 33.7 per cent, and both were negative in 17.1 per cent, or a total agreement of only 52.8 per cent. Realizing that this percentage of agreement is lower than any I have found in the literature I must say, lest my technic be criticized, that these Kahn tests were done in Dr. Kahn's laboratory. We divided the serum into three parts; one was sent to Dr. Kahn; on one a Kolmer test was done at Veterans' Bureau Hospital number 100 at Camp Custer, and on the other a Kolmer test was done in the laboratory of the Battle Creek Sanitarium. I still feel that while the Kahn test is a valuable aid, we should be slow to adopt it to the exclusion of the Kolmer test.

DR. A. J. CASSELMAN, Camden, N. J.: It has been brought out today that this is not a test to be put in the hands of amateurs without special training. I have had a major interest in serology for more than fifteen years. In 1913, I did the Wassermann tests for the Philadelphia General Hospital. During the war I did most of the Wassermann tests in Paris for the American Expeditionary Forces. Ever since the war, I have been doing the Wassermann tests for the city and county of Camden, and have had charge of the state syphilis control work in New Jersey. So far, I must admit my inability to obtain the sensitive results claimed for the Kahn test. I have tried many flocculation tests for syphilis and have found the Kahn modification the most reliable of these. Last year, after thoroughly studying Kahn's book, I spent a few months on the Kahn test, and was disappointed in not getting enough positive results in cases that had given positive Wassermann reactions. One should continue to use the Wassermann test until one can master the difficulties of the Kahn test.

DR. R. L. KAHN, Lansing, Mich.: A few points were raised in this discussion with which I disagree. Dr. Hartman spoke of false reactions in pathologic conditions other than syphilis. It will be recalled that in a study of about 3,000 hospital cases, carried out three or four years ago with Dr. Harther Keim of the department of dermatology and syphilology of the University of Michigan Medical School, which included cases of nephritis, diabetes, the febrile diseases, carcinoma and other pathologic conditions, no definitely positive Kahn reactions in the absence of syphilis were encountered. So far as we know, the Kahn test, when correctly performed, is specific for syphilis and yaws and not for any other disease. On the other hand, I believe that many workers obtain false Kahn reactions because of incorrect technic. This is especially true when the Kahn test is performed side by side with the Wassermann test. The technic of the Wassermann test with its daily titrations, its slow and fast hemolytic systems and with its other difficulties is frequently far more time consuming than ordinarily planned. The result is that there is often little time left for performing the Kahn test in all its required details. Under such conditions, it is to be expected that some would find the Kahn test unsatisfactory. I always urge workers not to undertake to use the test unless they can employ it correctly in every detail. Regarding the nature of the Wassermann test employed in the Michigan Department of Health Laboratories before it was abandoned in October, 1925, two tests were employed, one with cholesterinized antigen and one with cholesterin-free antigen. The fixation periods were four and one hours, respectively. Dr. Lyon belives that he has solved the problem of the serum diagnosis of syphilis by employing eight Wassermann tests. Assuming that this plan is satisfactory, it obviously is unpractical. In the Michigan laboratories, from 250 to 300 specimens are received daily and examined the same day with the Kahn test. Imagine performing eight Wassermann tests on each of 250 or 300 serums. Then, again, what should workers do in parts of the world removed from medical centers, in China, for example, in Africa, in South America, indeed, in some of our own states? Finally, without questioning the reliability of Dr. Lyon's work, one cannot help assuming that any method which requires eight repetitions must be built on a foundation which is basically weak.

LABORATORY AID FOR COMPLICATIONS IN ABDOMINAL SURGERY*

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[EDITORIAL NOTE.—This paper, together with that of Drs. Walters and Bollman, which follows it, concludes the symposium on abdominal surgery. In our last issue, we published the papers of Dr. Lahey, and Drs. Crile and Higgins.]

The laboratory can at times be of considerable aid to the physician in the care of complications in abdominal surgery. It can never replace clinical observations and clinical knowledge, and should be used only as an adjunct to these. Very often the laboratory is of no appreciable assistance in the care of the complications in abdominal surgery.

There are so many complications in abdominal surgery and so many laboratory methods of investigation that in a short communication such as this only a few of each of these can be touched on, and one can hope to indicate only in a general way several ways in which the laboratory can be made useful.

Blood counting is one of the oldest, simplest, and most reliable of the modern laboratory methods in use today. With it one can obtain definite information, especially as to whether or not a patient is anemic. Yet it would seem that only too often after it is known that a patient who has been operated on is anemic, this information is ignored. Patients with intra-abdominal or intrapelvic infections may at times develop a severe anemia with extraordinary rapidity. When this occurs the patient may go downhill very rapidly, or at best be able to overcome his infection slowly and with difficulty. This may occur even though apparently adequate drainage of the infected area has been established, and at times the surgeon is at a loss to know why his patient is not making progress toward recovery. It is remarkable to see the rapid improvement which will occur in these patients after they have been given one

* From the Laboratories of Columbia Hospital.
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or several transfusions of from 500 to 600 cc. of blood. An extremely toxic, febrile patient who is without appetite and is losing weight is sometimes transformed in two or three days into an almost different person with very little or no fever, returned appetite, a general feeling of well being, and a start on the road to recovery.

One of the most important substances which cells need in order to carry on their functions is oxygen, and one can take for granted that after an operation and in the presence of infection oxygen is even more important to the cells than under normal conditions. If anemia is present before an operation it should be corrected before the operation is performed. If it occurs after an operation, whether from loss of blood or from some other cause, such as an infection, it is a particularly serious condition. One can realize this because of information recently obtained by Raine and Yates at Columbia Hospital in a study of the effect of anesthesia and of operation on the oxygen-carrying power of blood. This work was presented at the recent meeting of the American Surgical Association, and some of the results can be mentioned here. These workers have found that the administration of nitrous oxide-oxygen or ethylene-oxygen anesthesia to a healthy adult for half an hour, without a simultaneous operation, will cause a reduction in the oxygen-carrying power of the blood of from 10 to 25 per cent, even though the maximum amount of oxygen is administered. This occurs not immediately after an operation but in from twenty-four to forty-eight hours, and the oxygen-carrying power does not return to normal for at least six or seven days. Ether is supposed to cause a similar effect. This effect is not caused by a possible anoxemia, since these investigators have administered 93 per cent of nitrogen with 7 per cent of oxygen to a dog, producing symptoms of anoxemia, but not causing any change whatever in the oxygen-carrying power of blood, the condition of the dog rapidly returning to normal. Whether the anesthetic gas forms a combination with hemoglobin, interfering with its power to carry oxygen, or whether the effect is caused in some other manner is not yet known. It is sufficient to point out here that in conditions of preoperative anemia, or anemia which develops within the first six days of the postoperative period, this diminution in the oxygen-carrying power of the blood caused by the anesthetic may have a serious significance. If a patient with a hemoglobin of 70 per cent, which is not considered especially low by most surgeons, should have his oxygen-carrying power reduced by 25 per cent, he will then have the equivalent of an anemia with the hemoglobin at about 50 per cent. Every one will admit that this is a severe anemia, whereas it might not be admitted by some that an anemia with the hemoglobin at 70 per cent needs serious consideration.

Therefore, let me enter another plea along with those that have been made many times by many others; namely, that information obtained from a blood count be given serious consideration, that anemia before or after operation be treated, and that it be treated with more transfusions than seem to be used today. Let me also suggest that although transfusions can be simply performed, nevertheless the performance of transfusions is an art. Best results will be obtained with transfusions, and the fewest chills and reactions will occur if they are done by some person in the clinic or community who has a liking for this work and has a knack for it. If transfusions are needed after an operation, they should be done by a person who has acquired this art of doing transfusions. Transfusions should not be done by the surgeon after he has just performed a major operation, but by an individual who comes to the transfusion fresh and alert. This individual should be available during the operation, for should a transfusion be necessary at this time, it would have to be done by some one besides the surgeon. In an investigation which is in progress of the records of our transfusions at Columbia Hospital during the past several years, we have found that reactions and chills after a transfusion of whole blood performed with a paraffin-lined tube occur only very rarely, in not more than 1 per cent of cases, which is much less often than after whole blood syringe transfusions or citrate transfusions.

The laboratory is of aid in discovering abnormalities in the acid-base balance of the blood, in indicating the treatment and in controlling the treatment. In recent years, postoperative acidosis has occupied a prominent place in our efforts in caring for patients. We have learned quite a lot about its cause, how to cure it, and how practically always to prevent it. With proper feeding before operation, elimination of the preoperative cathartic, the use of transfusions when necessary, and of ethylene anesthesia, we very rarely see a case of postoperative acidosis at Columbia Hospital nowadays. I am sure this is the experience in many other institutions. Ethylene has been a big factor in securing these results, as postoperative acidosis was not uncommon during the time that we used nitrous oxide-oxygen anesthesia. These good results with ethylene are particularly interesting in view of the diminution of the oxygen-carrying power of the blood caused by ethylene, and of the observation by Raine and Yates this is of the same degree as that caused by nitrous oxide.

Since the work of Haden and Orr, the condition known as alkalosis has received a great deal of attention everywhere. It has been found that this condition is even more common than that of postoperative acidosis, can occur before or after operation, can be very serious, and usually will yield to the proper treatment. Its symptoms are at times not unlike those of acidosis, and it is very important to differentiate it from acidosis, as the treatment for acidosis will very often be extremely dangerous to the patient with alkalosis. Alkalosis has been investigated at Columbia Hospital, particularly by Dr. Raine, our house physician, and he has verified all the observations of Haden and Orr, and I believe acquired some new and important information. Alkalosis occurs as a result of intestinal obstruction, and at times with partial intestinal obstruction. Raine has found that this is true whether the ileus is functional or mechanical. In marked alkalosis the carbon dioxide combining power of the blood plasma is raised, the blood chlorides lowered, and the blood nonprotein nitrogen increased. The cause of lowering of the blood chlorides is not known, but it certainly can occur when there has not been loss of hydrochloric acid by vomiting. At times the vomiting of patients with intestinal obstruction will cause such a degree of starvation that the tendency to starvation acidosis will prevent lowering of the blood alkali reserve. This test, therefore, does not always give as correct information as the determination of blood chlorides and the nonprotein nitrogen. Also, these last two tests are simpler and easier to perform. We have found marked lowering of the blood chlorides and elevation of the blood

nonprotein nitrogen in all patients studied who have paralytic ileus, whether this was reflex or caused by peritonitis. Therefore, these changes in these blood elements can be considered to indicate an ileus of some type.

The differentiation between simple paralytic ileus, and that due to peritonitis, must be made by physical examination, temperature, leukocyte counts, and so on. The alkalosis can be remedied by the generous administration of sodium chloride. This should be given subcutaneously or intravenously, in about a 3 per cent solution, until the blood chlorides are brought back to normal, and the administration should be continued after this long enough to keep the blood chlorides normal until the patient is well on the road to recovery. Sometimes 2 liters of 3 per cent sodium chloride solution (i. e., 60 Gm. of sodium chloride) have to be given intravenously in twenty-four hours to accomplish this. It is just as important, if not more so, to use this therapeutic agent before operation in cases of partial or complete intestinal or pyloric obstruction, sometimes delaying the operation until the chloride in the blood has reached normal. There can be no doubt, as has been found by many observers, that this method of treatment cures many patients, aids many more, and lengthens the lives of all patients, even those with peritonitis. It has not yet been determined in peritonitis whether it is the infection or the ileus which contributes mainly in causing the death of the patient. It is certain that the ileus is a large contributing factor. If the patient's life can be lengthened by several days with the use of such a simple procedure as the administration of salt solution, it would seem at least probable that some patients will, in this extra time, be able to overcome the peritoneal infection and recover.

For the past six months we have been perfecting a test for determining the bactericidal power of the blood against pyogenic cocci, such as staphylococci and streptococci. We know of no other accurate test of this sort except a similar one which has been developed independently by Dr. Kassowitz of Milwaukee, and which he will report on soon.

Our test is performed with whole blood prevented from clotting by the addition of heparin. The use of whole blood is important. Duplicate tests give results within about 3 per cent of one another, and a difference of this degree has no significance in interpreting the test.

The need for and the usefulness of this test have been apparent for a long time. To surgeons it will be of more use before operations than in postoperative complications. I believe that we can determine now the resistance of an individual before operation to staphylococci and streptococci, as well as to gram-negative organisms. It stands to reason that a patient with lowered resistance to pus cocci is a poor surgical risk. Means should be taken to build up that resistance before operating. We have already accomplished some results in this direction by the use of ultraviolet rays. Other methods for raising resistance of this kind are being investigated. We are looking forward to using this method in utilizing so-called immune transfusions for individuals with pyogenic infections. The use of this logical method of treatment has been held up until this time because we do not have a method for testing the bactericidal power of the blood of immunized donors. We hope to report progress in this study at a later time.

THE TOXEMIA OF DUODENAL FISTULA

PHYSIOLOGIC CHANGES CONCERNED IN THE PRODUCTION OF ITS CHARACTERISTIC CHEMICAL REACTIONS OF THE BLOOD *

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The toxemia of acute duodenal fistula is due for the most part to a loss of the acid and chloride of the gastric and the pancreatic juice discharged through the fistula. The discharge of acid turns the tide of the neutrality of the blood strongly toward alkalinity, and the loss to the body of chloride reduces the chloride in the blood from the minimal normal of 560 mg. to as low as 320 mg.

Toxemias in general are accompanied by an elevation in blood urea due, in some instances, to their production of a toxic nephritis, preventing elimination of urea, and infrequently to an increase in the amount of urea formed by the breaking down of body tissue. An elevation of blood urea occurs whether the toxemia is the result of gastro-intestinal, biliary or urinary obstruction, as well as during the last stages of any serious illness.[1] Duodenal fistula does not differ in this respect, and it is therefore imperative to eliminate the toxemia. Replacing blood chlorides by physiologic sodium chloride solution injected intravenously will raise the concentration of chloride in the blood to normal and control the toxemia in patients with acute duodenal fistula, as well as in animals with experimental acute duodenal fistula.[2] Other solutions, such as 2 per cent sodium sulphate or 5 or 10 per cent dextrose, do not control the toxemia and do not affect the decrease in blood chlorides, although they may decrease the urea through diuresis. Dextrose in particular produces this effect.

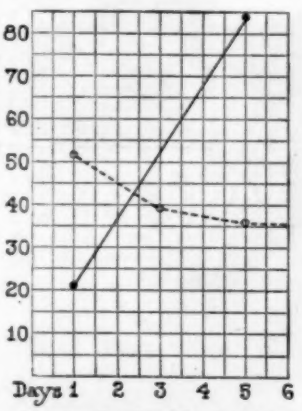

Fig. 1.—Duodenal fistula: chemical changes in the blood: solid line, urea; broken line, chlorides (clinical).

These changes in the blood occurred in a case in which a postoperative duodenal fistula developed following an extensive Polya-Balfour resection of the stomach for cancer (fig. 1 and table 1). This was the first patient with duodenal fistula to come under our observation. His blood prior to the development of the fistula

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1. Brown, G. E.; Eusterman, G. B.; Hartman, H. R., and Rowntree, L. G.: Toxic Nephritis in Pyloric and Duodenal Obstruction: Renal Insufficiency Complicating Gastric Tetany, Arch. Int. Med. **32**: 425-455 (Sept.) 1923. Bumpus, H. C.: Preparation of Patients for Prostatectomy, Surg. Gynec. Obst. **42**: 182-186 (Feb.) 1926. Hunt, C. C.: Suprapubic Prostatectomy for Benign Prostatic Hypertrophy: A Consideration of Preoperative and Postoperative Management, ibid. **43**: 769-780 (Dec.) 1926. Walters, Waltman; and Parham, Duncan: Renal and Hepatic Insufficiency in Obstructive Jaundice, ibid. **35**: 605-609 (Nov.) 1922.

2. Walters, Waltman; and Bollman, J. L.: Experimental Acute Gastric Fistula, Arch. Surg. **13**: 578-587 (Oct.) 1926. Walters, Waltman; Kilgore, A. M., and Bollman, J. L.: Changes in the Blood Resulting from Duodenal Fistula: A Clinical and Experimental Study, J. A. M. A. **86**: 186-189 (Jan. 16) 1926.

contained 522 mg. for each hundred cubic centimeters of chlorides and 21 mg. for each hundred cubic centimeters of urea; subsequent to the development of the fistula, the chlorides dropped to 327 mg. and the blood urea rose to 84 mg. The motor suction apparatus, used by Judd and described by Cameron,[3] was used to keep

TABLE 1.—*Duodenal Fistula; Chemical Changes in the Blood*

Date, 1924	Plasma Chloride, Mg. for Each 100 Cc.	Carbon Dioxide, Percentage by Volume	Urea Nitrogen, Mg. for Each 100 Cc.
8/12	522	69	21
8/20	393	..	80
8/22	327	..	84

Patient operated on, Aug. 15, 1925, Balfour-Polya type of anastomosis for carcinoma of the stomach.

the fistulous tract dry, but unfortunately, at that time we were not aware of the specific action of intravenous injections of physiologic sodium chloride solution in controlling the toxemia, and the patient died.

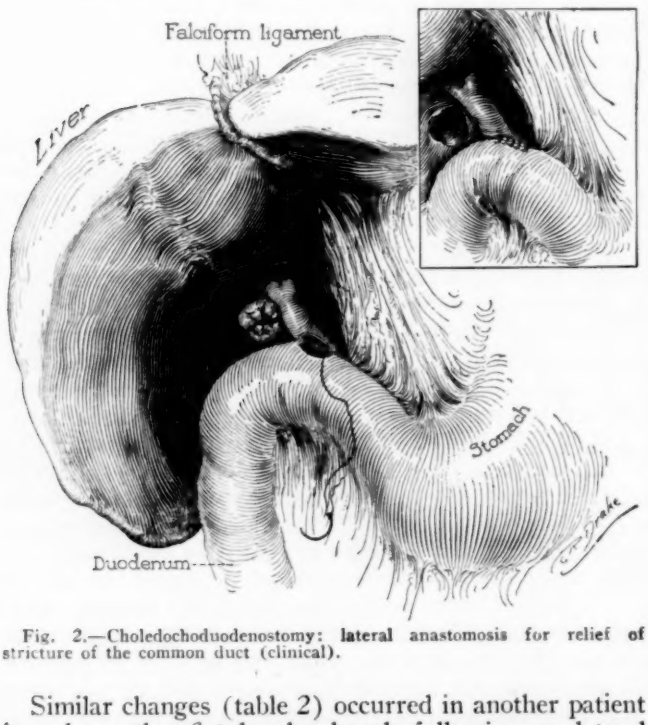

Fig. 2.—Choledochoduodenostomy: lateral anastomosis for relief of stricture of the common duct (clinical).

Similar changes (table 2) occurred in another patient in whom the fistula developed following a lateral anastomosis between the common bile duct and the duodenum for the relief of impassable stricture which was producing obstructive jaundice (fig. 2). Control of the toxemia and restoration of the blood to normal were brought about by the intravenous injection of large quantities of physiologic sodium chloride solution with dextrose in 10 per cent concentration added to supply nourishment. As the case was reported recently,[4] we will only say that the patient made an excellent recovery; the fistula healed spontaneously and the anastomosis between the common bile duct and the duodenum transmitted bile efficiently, thus relieving the jaundice.

In duodenal fistula, there is a loss from the body of large amounts of fluid, the constituents of which are the gastric secretion with its acid and chloride as well as the duodenal, biliary and pancreatic secretions. That such a loss is of considerable moment is evidenced by the fact that there is discharged through the fistula an average of 2.5 Gm. of sodium chloride each day, while the rapid digestion of the skin about the fistula is strong argument of the amount of pancreatic secretion being discharged.

Besides the loss of fluid through the fistula there is a disturbance of the gastro-intestinal motility. This occurs coincidentally with the development of the fistula. It is shown by the partial collapse of the intestine distal to the fistulous opening and the dilatation above. Furthermore, the chemical changes in the blood associated with disturbance in motility in the gastro-intestinal tract which have been reported by others are so closely parallel to those reported by us[5] in acute duodenal fistula that an explanation of the forces producing the chemical changes in either case would possibly afford a solution of the other.

EFFECT OF THE LOSS OF ACID AND CHLORIDE

If the chemical changes in the blood are due chiefly to the loss of acid and chloride through the fistula, there should be little change in the neutrality of the blood or in the blood chlorides if the loss of gastric secretion from the body is prevented and gastro-intestinal continuity is restored, regardless of the presence of the fistula. This was found to be true in animals with an anastomosis between the end of the stomach and the first portion of the jejunum, made after the duodenum was separated as an isolated loop of the bowel, the lower end of which was incorporated in the incision to form an external fistula discharging biliary, pancreatic and duodenal secretions (fig. 3).

If the operation is performed in two stages, the gastro-enterostomy being a preliminary measure and the isolation of the duodenal loop postponed until edema and swelling at the anastomosis have disappeared and the gastro-enteric stoma is functioning properly, the effect of disturbance in gastro-intestinal motility from partial obstruction by edema and swelling of the stoma is eliminated. There was practically no change in the concentration of chlorides, urea or reaction of the blood following the first stage of this procedure in a dog. Twenty-eight days later the second stage was carried out. The animal was not injected with physiologic sodium chloride solution at any time. When death occurred four days later the blood chlorides were 504 mg., the carbon dioxide combining power was 44.9 per cent by volume, and the urea was 23.24 mg. At necropsy a small duodenal ulcer 1 cm. in diameter was found just below the point of anastomosis. No other cause of death was found.

EFFECT OF THE LOSS OF PANCREATIC, BILIARY AND DUODENAL SECRETIONS

Animals discharging biliary, pancreatic and duodenal secretions from the body through the isolated duodenal loop fistula died on the seventh or eighth day in spite of the fact that gastro-intestinal continuity had been restored by gastrojejunostomy and the animals were eating and drinking. There was little change in the blood chlorides or in the carbon dioxide combining power in such animals but there was a tremendous

3. Cameron, A. L.: Treatment of Duodenal Fistula, Surg. Gynec. Obst. **37**: 599-606 (Nov.) 1923.

4. Walters, Waltman: Choledochoduodenostomy Followed by Duodenal Fistula: A Study of the Chemical Changes in the Blood, S. Clin. N. Amer. **6**: 1195-1198 (Oct.) 1926.

5. Haden, R. L., and Orr, T. G.: The Cause of Certain Acute Symptoms Following Gastro-Enterostomy, Bull. Johns Hopkins Hosp. **34**: 26-30 (Jan.) 1923; Chemical Changes in the Blood of the Dog After Intestinal Obstruction, J. Exper. Med. **37**: 365-375 (March) 1923; Chemical Changes in the Blood of the Dog After Pyloric Obstruction, ibid. **37**: 377-381 (March) 1923. McVicar, C. S.: A Discussion of the Clinical and Laboratory Findings in Certain Cases of Obstruction in the Upper Gastro-Intestinal Tract: The Rôle of Blood Chemistry in Diagnosis, Prognosis and Treatment of This Condition, Am. J. M. Sc. **169**: 224-235 (Feb.) 1923.

accumulation of urea in the blood. Although both physiologic and hypertonic sodium chloride solutions were injected intravenously, life was not prolonged beyond the seventh or eighth day. As evidence of this is the experiment performed on a dog which was given intravenous injections of hypertonic sodium chloride solution. This animal showed a variation in the blood chlorides within normal limits, between 622 and 542 mg., the first two days after operation. At this time 50 cc. of a 5 per cent sodium chloride solution was given intravenously once daily for four days. This dog also died on the eighth day with a blood urea of 122 mg., a normal carbon dioxide combining power of 54.5 per cent by volume, and a concentration of 700 mg. of chlorides for each hundred cubic centimeters of blood. The latter was slightly above normal, probably because of the injection of 100 cc. of 3 per cent sodium chloride on the two days preceding death. With normal concentration of blood chlorides and carbon dioxide combining power of the blood, death occurred regardless of intravenous injections of hypertonic sodium chloride solution, apparently from toxemia causing the accumulation of urea in the blood (fig. 4).

EFFECT OF LOSS OF DUODENAL SECRETION

If the major pancreatic duct and the common bile duct are transplanted into the jejunal loop of the gastro-jejunal anastomosis, pancreatic and biliary secretions can be retained in the gastro-intestinal tract, only pure duodenal secretion being lost from the body through its discharge from the isolated duodenal loop fistula (fig. 5). Animals subjected to such an operation have lived for several months in excellent condition. In the case of one dog, the operation was performed in two stages. First the common bile duct and major pancreatic duct were transplanted into the jejunum and the minor pancreatic duct was ligated. Twenty-eight days later the duodenum was isolated as a separate loop from the gastro-intestinal tract, the upper end closed, and the lower end left open and brought to the surface as a

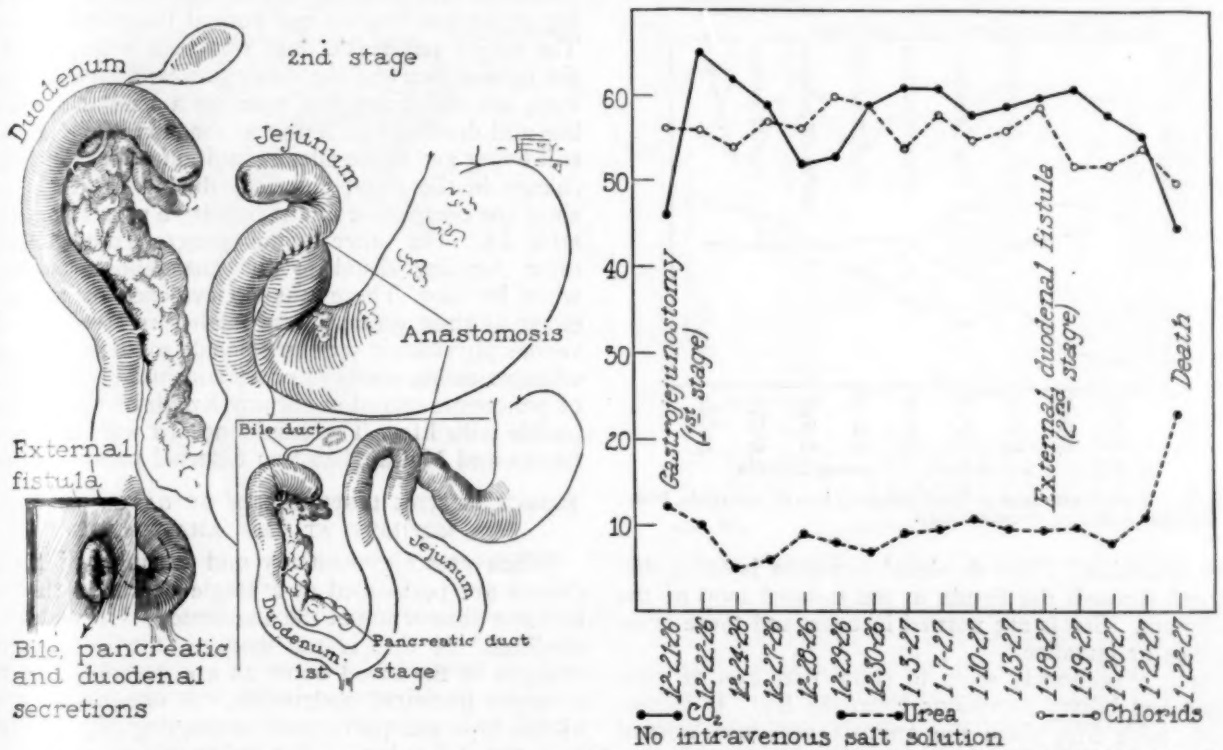

Fig. 3.—Scheme of operation to prevent loss of gastric secretion after institution of duodenal fistula. Coincident chemical state of the blood (experimental).

TABLE 2.—*Fluid Balance and Chemical Changes in the Blood*

	Intake							Output					Blood Chemistry				
Date, 1926	Proctoclysis, Cc.	Subcutaneous (Physiologic Sodium Chloride Solution) Cc.	Intravenous Injection of 0.9 per Cent Sodium Chloride Solution, Cc.	Oral, Cc.	Dextrose in 0.9 per Cent Sodium Chloride, Gm.	Dextrose in 0.9 per Cent Sodium Chloride Solution, Gm.	Total Fluid Intake, Cc.	Urine, Cc.	Emesis, Cc.	Bile Drainage, Cc.	Total Fluid Output, Cc.	Fluid Balance + or — Cc.	Urea, Mg.	Chlorides, Mg.	Carbon Dioxide Combining Power, per Cent by Volume	Serum Bilirubin (Van den Bergh) Mg.	Bile in Stool
5/23	2,500	1,400	.....	1,950	..	...	5,850	1,150	...	4,800	5,950	— 100	..	....	..	.....	Positive by Schmidt's test
5/24	1,500	.....	1,000	1,900	10	100	4,400	750	150	1,500	2,400	+2,000	49	490	37	15.2	
5/25	1,500	.....	2,000	2,400	20	200	5,900	950	200	1,600	2,750	+3,150	71	550	62	.....	
5/26	1,500	.....	2,000	1,880	20	200	5,380	950	500	2,000	3,450	+1,930	84	612	38	11.2	
5/27	1,200	.....	2,000	1,850	20	200	5,050	950	300	1,650	2,900	+2,050	32	660	46	9.2	
5/28	1,450	.....	1,000	1,250	9	100	3,700	700	250	1,300	2,250	+1,450	42	580	34	.....	
6/ 1	400	.....	.....	1,800	..	...	2,200	975	0	0	975	+1,225	24	580	42	5.9	
6/ 4	.....	.....	.....	1,800	..	...	1,800	1,300	...	.....	1,300	+ 500	29	605	54	.....	
6/ 5	.....	.....	.....	1,800	..	...	1,800	1,250	...	.....	1,250	+ 550	..	....	..	3.8	
6/ 7	.....	.....	.....	1,800	..	...	1,800	1,550	...	.....	1,550	+ 250	..	....	..	2.8	
6/14	.....	.....	.....	.....	..	...	.....	.....	...	.....	.....	.....	24	645	45	2.0	

fistula. An end-to-end anastomosis was made between the ends of the stomach and the jejunum. The animal recovered from the operation and his subsequent course was practically normal, the concentration of chlorides and urea and the carbon dioxide combining power being normal for several months. The animal is still living and in excellent condition three months and eleven days after operation. Pure duodenal secretion is being discharged through the fistula in the isolated loop of the duodenum. Stools are normal in color and there is no diarrhea or jaundice.

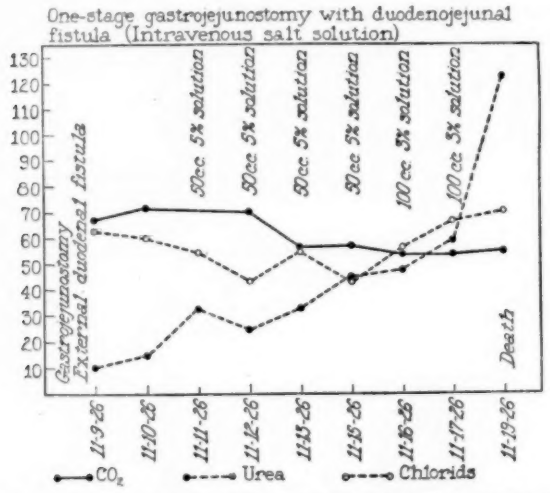

Fig. 4.—Chemical alteration of blood following loss of pancreatic, biliary and duodenal secretions (experimental).

These experiments seem to show that loss of pancreatic and biliary secretions from the body is incompatible with life, since the animals remained normal when such loss was prevented by transplanting the major pancreatic duct and the common bile duct into the jejunal loop, even though the pure duodenal secretion was discharged from the isolated loop of the duodenum.

EFFECT OF LOSS OF PANCREATIC SECRETION

In order to determine whether the loss of the bile or the loss of the pancreatic secretion was the lethal factor, the major pancreatic duct alone was transplanted into the jejunal loop, and the duodenum was isolated, the duodenal secretion and bile thus being discharged through the external fistula.

To avoid the factor of obstruction at the stoma, gastrojejunostomy with end-to-side anastomosis was performed as a preliminary procedure on two dogs. Sufficient time was allowed to elapse for complete healing of the anastomosis and normal functioning to occur. The major pancreatic duct was then transplanted into the jejunal loop and the duodenum isolated as a separate loop, the end being left open as a fistula, discharging bile and duodenal secretion to the surface. One dog is still living and in excellent condition with practically no change in the blood chlorides during the three weeks since the completion of the operative procedures (fig. 6, table 3). The other animal progressed well until an ulcer forming distal to the anastomosis perforated, when he died. There was no evidence of toxemia in either of these animals, and neither received any intravenous physiologic sodium chloride solution. This group of experiments seems to prove conclusively that the loss of pancreatic secretion for any length of time is incompatible with life. The results accord with the work of Elman and McCaughan [6] on external pancreatic fistula.

EFFECT OF THE DISTURBANCE OF GASTRO-INTESTINAL MOTILITY AT THE ANASTOMOSIS

When gastrojejunostomy and isolation of the duodenum are performed at a single operation there may be some obstruction at the anastomosis from edema and swelling. If this is too marked, the same chemical changes in the blood occur as are described by others in upper intestinal obstruction. A one-stage operation of this type was performed on one dog (fig. 7). Prior to operation the level of blood chlorides was 577 mg.; the carbon dioxide combining power 57 per cent by volume, and the blood urea 14 mg. Three days after operation the concentration of blood chlorides was 396 mg., the carbon dioxide combining power was 69.7 per cent by volume, and the blood urea was 147 mg. On

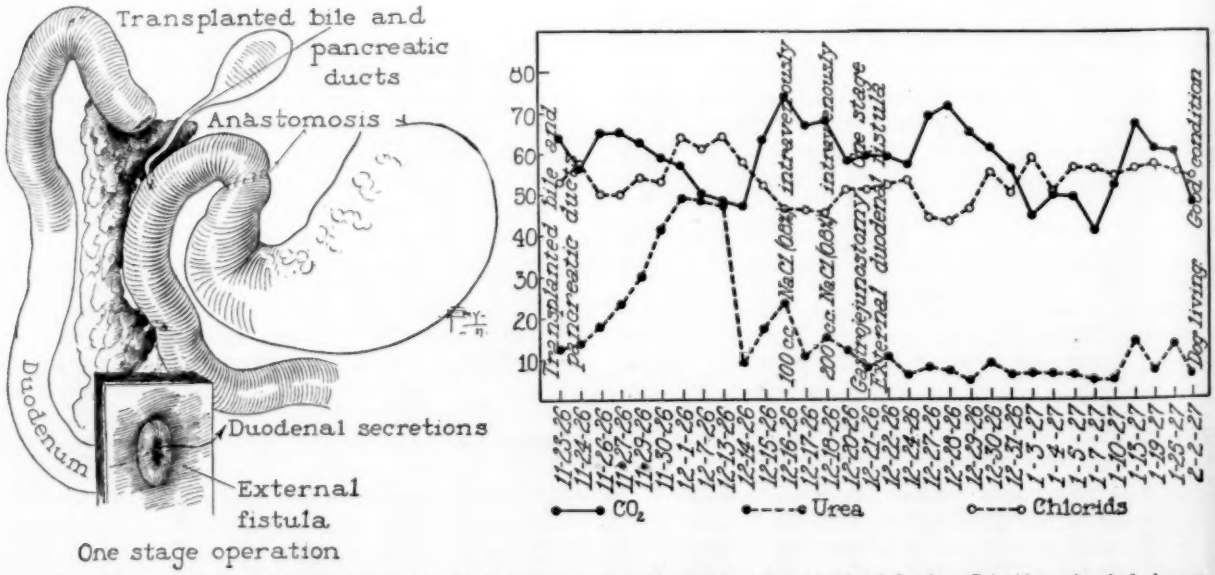

Fig. 5.—Scheme of operation to prevent loss of biliary and pancreatic secretion from duodenal fistula. Coincident chemical changes in the blood (experimental).

6. Elman, Robert; and McCaughan, J. C.: The Fatal Effect of the Complete Loss of Pancreatic Juice, Proc. Soc. Exper. Biol. & Med. **24**: 99-101 (Oct.) 1926.

two occasions the animal was injected with 50 cc. of physiologic sodium chloride solution intravenously without improvement. The animal died six days after operation. The difference in the chemical changes in the blood of this animal led to the belief that the unusual lowering of the blood chlorides with the rise in the carbon dioxide combining power might be due to the disturbance of motility at the anastomosis from swelling and edema. Intravenous injections of physiologic sodium chloride solution were of no avail. At necropsy the abdominal cavity was clean, but bronchopneumonia of distemper was found. Because of the bronchopneumonia and the decrease in blood chlorides in pneumonia of the acute pneumococcus lobar type, however, noted by other observers, the experiment might not be considered as conclusive evidence of the effect of disturbance of motility from swelling and edema at the anastomosis. Nevertheless, one cannot disregard the fact that in some instances in which the isolation of the duodenum and the gastrojejunostomy were carried out as a one-stage procedure with end-to-end anastomosis, there was a tendency toward a lowering of blood chlorides, and a rise in the carbon dioxide combining power of the blood not present in the two-stage operation. The explanation of this may be that when sufficient disturbance of gastro-intestinal motility occurs, as at the stoma of the end-to-end anastomosis, chlorides are excreted into the intestinal tract to be discharged from the body as fluid from an intestinal fistula, or in the feces and urine. Evidence of this was presented in the studies on gastric fistula when, after total gastrectomy in dogs, as much as 11 Gm. of chloride was obtained from the fluid passed by rectum and in the urine during their four-day postoperative period of life.[2] Similarly, the excretion of chlorides was increased in an animal in which a one-stage gastrojejunostomy with isolation of the duodenum was performed (table 4). At a prior operation the major pancreatic duct had been transplanted into the jejunum and the minor pancreatic duct ligated. Seven days after the last operation there was a drop in blood chlorides from 542 to 341 mg., and a rise in the carbon dioxide combining power of the blood from 65.2 to 84.2 per cent by volume, and in blood urea from 9.5 to 128 mg. (fig. 8).

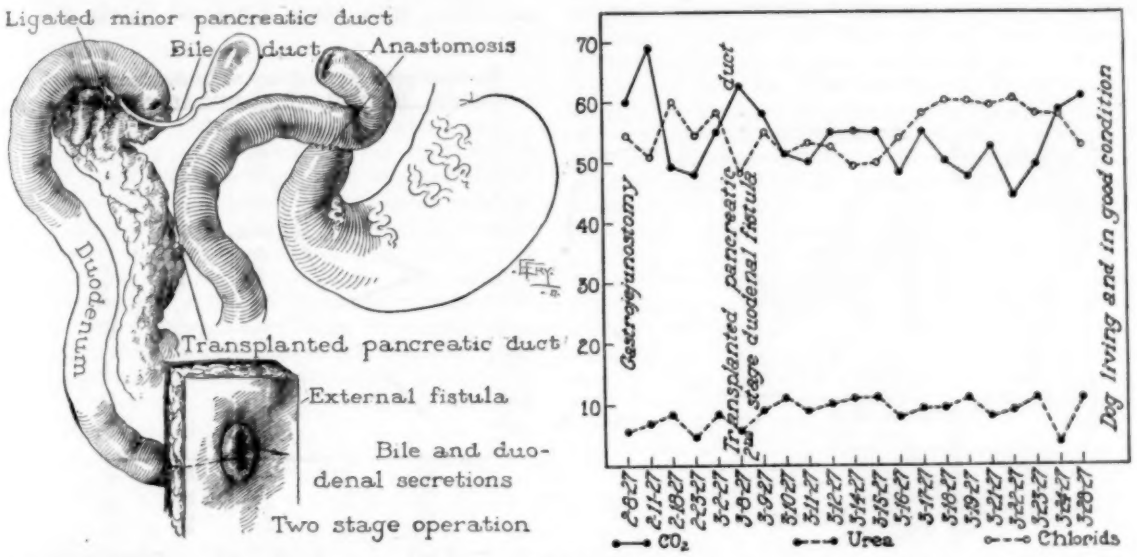

Fig. 6.—Gastrojejunostomy with external duodenal fistula. Transplantation of major pancreatic duct. Two stages (experimental).

TABLE 3.—*Chemical Changes in Blood, Urine and Rectal Fluid, Following Two-Stage Gastrojejunostomy and Duodenal Fistula with Diversion of Pancreatic Secretion to Jejunum*

		Blood			Urine and Fluid					
Date	Time	Carbon Dioxide, per Cent by Volume	Urea Nitrogen, Mg. for Each 100 Cc.	Chlorides, Mg. for Each 100 Cc.	Total Nitrogen, Mg.	Urea and Ammonia Nitrogen, Mg.	Ammonia Nitrogen, Mg.	Chlorides, Mg.	Volume, Cc.	Comment
2/ 8/27	2:00 p.m.	60.3	6.84	545	.....	.....	.....	.....	...	Gastrojejunostomy
2/11/27	9:00 a.m.	60.0	6.94	511						
2/18/27	9:00 a.m.	49.7	8.77	607						
2/23/27	9:00 a.m.	48.8	4.83	544						
3/ 2/27	9:00 a.m.	55.5	8.19	584						
3/ 8/27	9:00 a.m.	62.3	6.87	481	.....	.....	.....	.....	...	Transplanted pancreatic duct and duodenum isolated; animal on regular diet
3/ 9/27	9:00 a.m.	58.4	8.00	557	2,745	1,634	342	199	95	
3/10/27	9:00 a.m.	51.6	11.83	511	7,380	4,200	144	480	150	
3/11/27	9:00 a.m.	50.7	9.61	530	9,652	4,702	297	412	825	
3/12/27	9:00 a.m.	55.5	10.86	528	9,060	4,020	360	45	150	
3/14/27	9:00 a.m.	55.5	11.23	496	11,340	6,636	1,092	168	420	
3/15/27	9:00 a.m.	55.6	11.42	506	5,724	3,726	472	135	135	
3/16/27	9:00 a.m.	48.7	8.36	547	11,680	5,040	360	260	200	
3/17/27	9:00 a.m.	55.6	9.25	580	11,232	4,518	630	1,090	180	
3/18/27	9:00 a.m.	50.7	9.17	607	12,720	4,900	542	787	175	
3/19/27	9:00 a.m.	47.7	11.90	607	7,650	5,400	530	1,940	440	
3/21/27	9:00 a.m.	52.6	8.30	502	19,480	9,120	1,440	3,000	400	
3/22/27	9:00 a.m.	44.9	9.12	610	12,480	6,870	900	1,620	300	
3/23/27	9:00 a.m.	49.7	11.69	579						
3/24/27	9:00 a.m.	58.4	5.74	577	17,248	9,966	770	1,584	220	
3/28/27	9:00 a.m.	61.3	11.48	523	.....	.....	.....	.....	...	Dog living and in good condition

This change in the chemical reactions of the blood similar to that in another animal led us to believe that partial obstruction existed at the anastomosis between stomach and duodenum. The blood changes in these two dogs were typically those of acute duodenal fistula with discharge of acid and chloride gastric secretion through the fistula and also of high intestinal obstruction. The explanation for these chemical changes in the blood may be that the amount of chlorides excreted in the fistulous fluid in the bile and duodenal secretion and in the urine was sufficiently increased to account for the loss of chlorides in the blood. A total of 6.5 Gm. of chloride was excreted by this animal in the seven-day period following operation (table 4), as compared with 1.5 Gm. in one control dog and 2.5 Gm. in another control dog during a similar period (table 3). Two-stage operations had been performed on these controls, thus eliminating the possibility of obstruction. Sodium chloride injections were not given to any of the three animals. Necropsy examination of the animal with the one-stage operation showed the major pancreatic duct draining into the jejunum and the minor pancreatic duct ligated, and the gastrojejunostomy patent and functioning. No cause for death was determined other than the fistula.

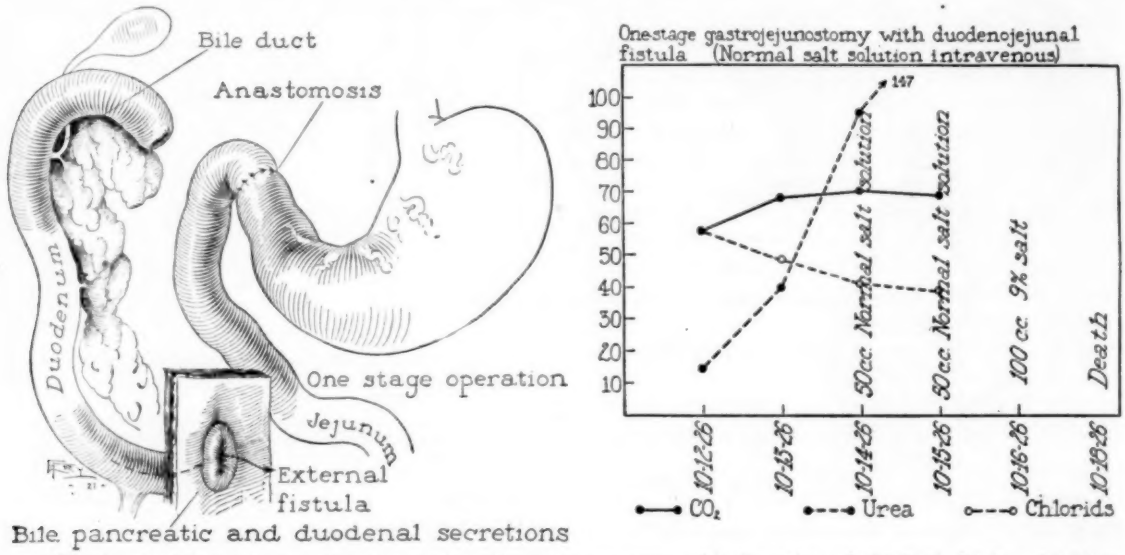

Fig. 7.—Gastrojejunostomy and exclusion of duodenum in one stage, with formation of duodenal fistula. Coincident chemical changes in the blood (experimental).

CONCLUSIONS

1. Changes in the chemical reactions of the blood associated with acute duodenal fistula are chiefly the result of the loss from the body of the acid and chlorides of the gastric secretion through the fistula.

2. Even if loss of the acids and chlorides in the gastric secretion from a duodenal fistula is prevented by gastrojejunostomy, disturbance in motility in the upper intestinal tract causes an increase in the excretion of chlorides from the body through the intestinal and urinary tracts, with changes in the concentration of blood chlorides which are proportionately decreased.

3. Continuous loss of pancreatic secretion is fatal, whereas loss of bile and duodenal secretion is without lethal effect.

TABLE 4.—*Chemical Changes in Blood, Urine and Fecal Fluid, Following One-Stage Gastrojejunostomy and Isolation of Duodenum* *

		Blood			Urine and Fluid					
Date	Time	Carbon Dioxide, per Cent by Volume	Urea Nitrogen, Mg. for Each 100 Cc.	Chlorides, Mg. for Each 100 Cc.	Total Nitrogen, Mg.	Urea and Ammonia Nitrogen, Mg.	Ammonia Nitrogen, Mg.	Chlorides, Mg.	Volume, Cc.	Comment
12/21/26	2:30 p.m.	52.6	9.00	589	.....	.....	.....	.....	...	Major pancreatic duct transplanted into jejunum; minor duct ligated
12/22/26	8:00 a.m.	71.9	9.50	541						
12/24/26	8:00 a.m.	76.8	14.92	495						
12/27/26	9:00 a.m.	76.8	9.61	369						
12/28/26	10:00 a.m.	77.4	12.50	409						
12/29/26	9:10 a.m.	68.1	8.33	485						
12/30/26	10:00 a.m.	71.9	11.23	493						
1/ 3/27	9:30 a.m.	56.5	7.35	585						
1/ 7/27	9:30 a.m.	59.4	6.53	610						
1/10/27	.....	55.5	6.04	632						
1/13/27	.....	64.2	6.26	556						
1/19/27	.....	66.1	8.82	546						
1/25/27	.....	65.2	9.56	542	.....	.....	.....	.....	...	Gastrojejunostomy with isolation of duodenum and fistula (one-stage operation)
1/26/27	.....	63.2	15.50	572	6,950	3,400	125	350	500	
1/27/27	.....	77.8	32.52	462	5,880	2,940	910	1,050	700	
1/28/27	.....	71.9	50.24	437	5,270	4,235	965	1,795	850	
1/29/27	.....	89.4	58.80	363	7,507	4,537	1,815	2,886	800	
1/31/27	.....	94.6	93.96	331	11,475	7,480	2,125	110	850	
2/ 1/27	.....	84.2	128.2	341	9,120	4,880	2,080	288	800	
2/ 2/27	.....	....	.....	...	.....	.....	.....	.....	...	Necropsy: minor pancreatic duct ligated, major draining into jejunum; gastrojejunostomy patent and functioning; no cause for death other than fistula

* The pancreatic secretion had been previously diverted into the jejunum.

4. Disturbances of gastro-intestinal motility accompanying duodenal fistula apparently increase the excretion of chlorides from the body through the intestinal and urinary tracts.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. LAHEY, CRILE AND HIGGINS, THALHIMER, AND WALTERS AND BOLLMAN

DR. C. S. MCVICAR, Rochester, Minn.: In our experience, postoperative acidosis occurs extremely rarely apart from proved diabetes or advanced renal insufficiency. In those conditions of inhibition of motor function of the upper gastro-intestinal tract occurring after operation, the shift in the acid-base equilibrium is characteristically to the alkaline side. Increasing experience has convinced me that disturbance in the chemical reactions of the blood (which we find in association with these motor inhibitions), especially a rise in blood urea, a fall in chlorides and an increase in the alkali reserve, is a result rather than a cause of the toxic postoperative condition. I say this because we no longer encounter cases which show marked changes in the chemical reactions of the blood following operation. We still see changes in preoperative cases in which there is obstruction to the pylorus. We do not see them postoperatively because we are recognizing the motor disharmonies, and are commencing treatment before the chemical changes have occurred. The most important clinical evidence of impending disaster is a negative water balance; that is to say, a condition in which the total output of fluid by vomiting, in the urine, by rejected proctoclysis, and in unabsorbed subcutaneous fluid is in excess of the intake. A handy rule is to regard an output of urine of less than 500 cc. in twenty-four hours as an extremely important danger signal. In treatment, it is our practice at the Mayo Clinic to use as a routine a solution which contains 10 Gm. sodium chloride and 100 Gm. dextrose to a liter of distilled water, and we use this by intravenous injection. I am not prepared to say exactly what part of this solution is effective, but I am reasonably convinced that it is not specifically sodium chloride. I would not go so far as to say that physiologic dehydration is the underlying cause. I should like to say, however, that in those cases—and there are a few cases of acidosis occurring apart from diabetes and advanced renal insufficiency, especially in the postoperative care of the seriously jaundiced patients, such as Dr. Lahey mentioned—we have had the peculiar experience of seeing a case of acidosis, on the one hand, and of alkalosis, on the other, in this acid-base disequilibrium, restored by exactly the same procedures. That is to say, the same intravenous solution was used. In the use of intravenous solutions of salt and dextrose, I believe that the success depends on the use of enough of it. It is a convenient rule when one is in doubt as to whether one should use 1 liter or 2 liters, always to use 2; when in doubt as to whether to use 2 or 3, always to use 3. We have, without any danger to the patient and with the greatest benefit, used as much as 6 liters in twenty-four hours.

DR. J. EARL ELSE, Portland, Ore.: Postoperative complications, both immediate and late, are often the result of an improper understanding and the improper execution of drainage. I think that there are only two indications for drainage, one to remove serum in order that it may not become infected, and the other to establish a fistulous tract in an area already infected in order that there may be free drainage to promote healing. One of the first principles of drainage is that it be dependent. Water does not run uphill, and neither does pus or serum in the abdomen. The secretory pressure and the intra-abdominal pressure will force them uphill, but there will always be a residue left that militates against the rapid healing of the wound. Frequently, in operative procedure, there is an oozing that is not entirely controllable; it is not a bleeding from definite points, but an oozing. Hot applications diminish it, or check it for the moment, but it may recur. If it is allowed to remain, there may be an accumulation of serum that may become infected, even though the operation is clean. It may become infected through organisms brought through the blood stream, or it may become infected through organisms extending from the operative wound down to the point where the serum accumulates. Therefore, if there is a wound in which there is going to be some accumulation of serum, a small drain for a short period of time will often prevent the development of an infection that would otherwise take place if the serum was allowed to accumulate. The second indication is the creating of a fistulous tract down to an infected area in order that it may heal. I do not believe in large drains. All those who have done very much postmortem work have seen the frequent evidence of adhesions that have been first stretched, then broken, and then absorbed. But if dense masses of adhesions are created they remain for all time, and later may give serious trouble. The drain not only should be small, but should be left in only a comparatively short time, because it takes only a short time to establish a plastic wall about the drain, and fluid will drain out afterward. If a drain is put in a perfectly sterile wound and left there for a period of time, infection will work down along the drain. I wish to call attention to one thing regarding drainage when the gall-bladder has been removed. One time a ligature on a cystic duct gave way. I had put in a cigaret drain. Bile did not escape readily through the drain, but when it was removed there was a gush of bile, and the patient died from peritonitis. Since that time I have always put in a cigaret drain with a small rubber tube in the center, so that if there should be an

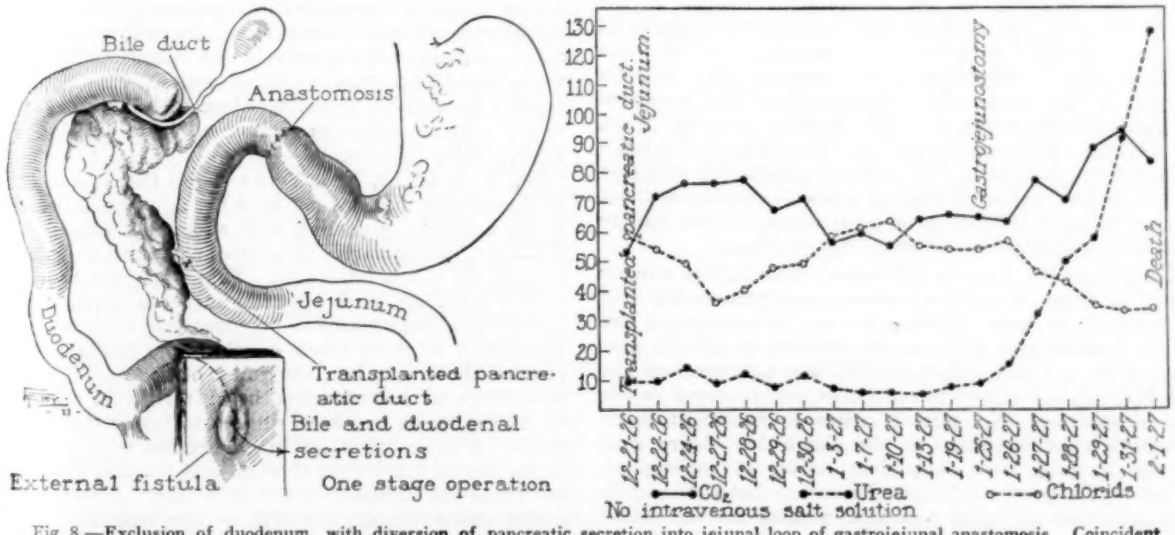

Fig 8.—Exclusion of duodenum, with diversion of pancreatic secretion into jejunal loop of gastrojejunal anastomosis. Coincident chemical changes in the blood (experimental).

escape of bile it could flow freely and not be dammed back, as it was in that patient.

DR. H. D. FURNISS, New York: One of the chief points in avoiding infection in postoperative hernia is the lack of traumatism in the handling of the wound. I feel that the technic Dr. Ward used for years, of making a median skin incision, a paramedian fascial incision and then going between the recti, is of importance. In going between the recti, one avoids traumatism to the muscle, with less danger of a breaking down afterward. Dr. Higgins spoke also of the avoidance of mass ligatures in the control of hemorrhage. The clamps should be applied to the vessel itself, or to as little tissue around that vessel as possible. It should be ligated with small catgut, and every bit of the oozing must be controlled. One thing responsible for some of our troubles is the use of plain catgut to close the peritoneum, especially if there is nausea and vomiting. It is better to use small chromic catgut to close the peritoneum and the posterior rectus fascia, in that way preventing separation, if there is distention or vomiting. Some one recently said that postoperative ruptures of wounds are nearly always preceded by an omental hernia. I think that is when it may occur. I never had very much faith in the timing of catgut; if one is given a ten-day or twenty-day chromic catgut, it may hold only a day or two. I have seen that happen quite often. For that reason, in the last fifteen months I have been using the three string closure that is used by the majority of the attending surgeons at the Woman's Hospital; the peritoneum is closed with catgut (I use chromic), and the next stitch is a running mattress stitch of tension silk, a nonabsorbable, waterproofed silk. That is put in first in the fascia. The next one is put in loosely in the fat, and the third one is a subcutaneous running stitch. Those are tied together, and are not removed until the tenth or twelfth day. Infection very seldom occurs. If infection does occur, it can be vented through the skin incision without interfering with the stitches, or a paramedian incision can be made to open any abscess that may have developed.

DR. CHANNING W. BARRETT, Chicago: Enough has already been said to show that postoperative complications are still a pitfall to the surgeon. Many of those complications are due to the lack of preoperative care, or lack of skill in preoperative care, and to the lack of skill and judgment on the part of the surgeon at the time. Some are inherent in the patients themselves. No patient comes to operation in as good condition for operation as she should be. More time can usually be used, after the patient arrives at the hospital, in getting her in good condition. Failure to have the mouth in good condition can give a patient a most uncomfortable and dangerous postoperative complication. Not only should the mouth be put in good condition by the dentist, but the patient should not be operated on too soon after that has been done, because there are still bacteria present that have been made more active, perhaps, by the procedure that has been carried out. Failure to take this into account resulted, in one of my cases, in a badly infected parotid. The method of iodine application to the abdomen assumes an efficacy that iodine does not have. More preparation of the wound than that should be carried out. When drainage has to be carried out (and sometimes it does have to be in spite of the idea that drainage is disappearing), the drainage wound should be a different one from the operative wound. There are abdomens that should not be entered unless operation is positively necessary. Mild things should be left alone. In cases of fibroids, giving little trouble, I would go to great trouble to remove the fibroid through the vagina rather than to open the abdomen. Some patients should almost always have an abdominal hysterectomy; others should have a vaginal hysterectomy, but there are midline cases in which I would be willing to go to great trouble to do a vaginal hysterectomy rather than an abdominal. By attention to these things, we may avoid many postoperative hernias.

DR. FRANK W. LYNCH, San Francisco: Until quite recently, the medical world believed that nearly all lung complications were due to embolic processes which had escaped from the operative field. Very recently, largely through the work of Chevalier Jackson, there has been proof that many of these lung complications are direct descending processes from the mouth into the lungs, the infectious processes passing through the very superficial lymphatics. Terry has used as a preoperative treatment a bacteriostatic dye which Berwick in San Francisco made of gentian violet and methyl green to prevent infections from pyorrheal pockets during dental work. The teeth and gums are painted with this dye the day before operation, and shortly before the anesthetic. This treatment has reduced the lung complications in the last 5,000 major surgical cases in the University of California Hospital to one half the number found in a series of equal size that were not so treated before operation. In talking with some of the men here in this meeting, I found that the matter of routine preparation of the mouth was not as common a preoperative procedure as I had thought it was.

DR. P. B. SALATICH, New Orleans: The peritoneum seems to take care of itself. If we are going to do a muscle splitting operation, we ought to try to save the little nerve filaments. That is important in the healing of a muscle. Many surgeons, before they suture the fascia, clamp the fascia all along the line, which is helpful for them, but injurious to the fascia, as often the forceps are on the fascia for at least five minutes, or perhaps ten or fifteen minutes if the operator is slow. It is not necessary to clamp the fascia to suture. Some surgeons, in suturing, take a big bite, pull hard on it, take another bite, pull, and instead of opposing fascia to raw surface, there is an overlapping. Then they are surprised if a hernia results. By the time one has come to the point of closing the skin, the iodine, especially if there is some serum, is practically washed away. I think it is a good rule, before putting in skin sutures, to make another application of iodine. Another good principle is to wash the incision before each layer is sutured with saline solution, so as to remove all little clinging clots that might invite infection.

DR. B. L. COLEY, New York: I feel that one of the factors of importance that has not been brought out in the discussion is the practice, in dealing with abdominal cases that require drainage, particularly of active suppurative infections, of leaving the fascia unsutured. That work was brought out by one of the New York Hospital surgeons a few years ago in analyzing a large series of postoperative ventral hernias. He found that in those cases in which the fascia had not been sutured there was less sloughing of the fascia and a lower percentage of postoperative hernias than in those cases in which the fascia had been sutured in layers tightly about the drain. A practical point in connection with this procedure is the use of the button through-and-through sutures that do not cross the incision on the skin side. A deep suture that passes down through the skin on one side, across the layer, and up through the other side can be drawn tightly about two buttons; in this way the incision itself can be left open and the slough of the fascia, which is so disastrous, can be prevented. Dr. Craig spoke about obesity. We have found that fat is a very important predisposing factor in hernia of all kinds. Dr. Roeder of Omaha has emphasized this in a paper entitled "The Relationship of Fat to Abdominal Hernia." Watson of Chicago also brought out the importance of the rôle which fat plays in the formation of various types of hernia. I believe that it should be recognized that the obese abdomen is subject to a higher percentage of postoperative ventral hernias. The risk of subsequent hernia formation lies in the interstitial fat, particularly that in the properitoneal layer, rather than in the amount of subcutaneous fat, since the presence of excessive fat in the properitoneal tissues weakens this layer and interferes with the proper approximation during closure of laparotomy wounds. If omentum or intestine once makes its way between the edges of the peritoneal closure, a hernia is likely to develop despite most careful closure of the muscles and fascia.

DR. DANIEL H. BESSESEN, Minneapolis: Unquestionably, the postoperative treatment of any surgical case is as important as the surgical technic. A very striking fact is that many of these complications occur in the same patient. A poor risk is more liable to complications than a good risk. The subject of gastrectasia is a very important one. It has been given a mortality of from 75 to 80 per cent. It requires active and energetic treatment. I have seen two cases of acute dilatation of the stomach followed by postoperative

wound opening. This has followed an effort on the part of the surgeon to treat this complication by the method of moving the patient from side to side or on the abdomen. The conclusion reached was that this method of treating this complication was unsatisfactory. It is wiser to treat acute gastrectasia with the stomach or duodenal tube, preferably the latter, in combination with pituitary extract. R. E. Farr, who has made a special study of postoperative wound openings, believes that the separation of the wound begins in the peritoneum and separates the layers from within out. A careful review of a large series of cases of this type reveals the fact that in 75 per cent of the cases reviewed the sutures had been made with retention stitches. He believes, then, that retention stitches may make the patient more susceptible to postoperative wound opening than the absence of such stitches. The subject touched on by Dr. Furniss has also been observed in Minneapolis by Mann, who attempted to do hemorrhoidectomies by a suture method, using a various number of sutures on each different hemorrhoid; that is, he would use on one hemorrhoid the plain catgut, on another chromic, on a third kangaroo tendon. His work bears out Dr. Furniss' belief that in different individuals the stitch may not last as long as the laboratory men state. In some of these cases, the kangaroo stitch came out in as short a time as five days. It is probable, however, that the placing of a retention stitch too tightly is responsible for anemia of the wound, and it thus gives a fairer chance for wound opening than does the absence of the retention stitch itsef. The most reliable method we have of combating this possible complication is the use of a proper incision and careful dry closure. Wound opening is more likely to occur in women than in men.

DR. JOSEPH L. BAER, Chicago: My first hospital appointment was as anesthetist, and for a number of years I taught the interns in our hospitals how to administer anesthetics. I believe that postoperative parotitis is primarily traumatic, and I think that it starts with the mauling of the posterior angles of the jaw, which is done by the anesthetist who does not know how to hold the jaw forward. The proper grip for advancing the jaw is with two fingers under the anterior end of the jaw in the midline, with no pressure at the posterior angles over the parotid. Five years ago I reported the first case of massive collapse of the lung identified in Chicago. On the second day after a cesarean section, the patient went into a cardiac and pulmonary collapse with various diagnoses until about the fourth day when a diagnosis of massive collapse of the lung was made, the entire right side having collapsed. Complete recovery ensued. I think it desirable in every severe pulmonary complication that a roentgenogram of the chest be made, because I believe that more often than we realize a partial or massive collapse will be found. The treatment is so simple that an early diagnosis will spare patient and physician much distress.

DR. LOUIS ANTUPIT, Hartford, Conn.: I am glad Dr. Baer stressed trauma as a causative factor in the production of postoperative parotitis. As I pointed out, our interns and anesthetists and others should be particularly cautioned against mauling the jaws when administering an anesthetic. There is no doubt that trauma will play an important part, but first we must have a primary focus of infection. That is why we encounter fewer cases of postoperative parotitis. Dr. Barrett mentioned the care of the teeth. Careful examination of the teeth before operation must be insisted on, and a note to that effect recorded in the history. Dr. Lynch referred to the dye as an excellent antiseptic in the prevention of pulmonary postoperative complications. It does play a part in the prevention of postoperative parotitis when the immediate or underlying cause is an infection present in the oral cavity. Hospitals throughout the country do not pay enough attention to the condition of the mouth. There still lingers in many the teaching that secondary parotitis is due to a sympathetic infection. We know that infection cannot be carried through a sympathetic or reflex course. Should suppuration occur in the parotid gland, one should not wait for fluctuation for incision, because if one does, one is taking away from the patient the possibility of preserving good parotid tissue. Incision should be early.

DR. ROBERT L. CRAIG, New York: Drs. Furniss and Salatich emphasized the importance of technic, which was my first point. The technic of opening, and the care with which the abdomen is opened and closed, are important factors—the most important—in the prevention of postoperative hernia. Dr. Barrett mentioned the variation in different abdomens. Almost all pathologists and anatomists have noted that difference. There is great variety in the quality of the connective tissue and the fascial structures of the abdomen, and it is reasonable to suppose that if such structures are inferior to begin with, they will prove inferior after the traumatism of ordinary operative procedures. Dr. Coley mentioned the practice of leaving the fascia open when drainage is employed, but I would reemphasize that in this series of seventy-nine cases of postoperative ventral hernia, drainage per se was a factor in only seven cases, which I think emphasizes the contention that drainage plays a very minor rôle. Finally, the fact mentioned by Dr. Bessesen, that in very few instances is one factor alone responsible, is important. The possible factors are many, and in almost all cases more than one factor is operating.

DR. WILLIAM THALHIMER, Milwaukee: There seems to have arisen a difference of opinion concerning the relationship of sodium chloride and alkalosis to various gastro-intestinal conditions before and after operations. Certain facts have been presented which cannot at present be grouped under one explanation. None of these facts can be thrown out, so an explanation of them must await further study. Whereas Dr. Walters has demonstrated that under certain conditions of loss of hydrochloric acid from the stomach there follows a diminution of blood chlorides, it has been demonstrated also by many workers that blood chlorides will diminish in human beings and in experimental animals when there is no loss of hydrochloric acid from the stomach. Therefore, it is certain that loss of hydrochloric acid from the stomach is not necessary to cause diminution of blood chlorides. I agree with McVicar that in all probability the symptoms under discussion are not caused by lowering of the sodium chloride in the blood, but that the diminution in blood chlorides is the effect of the abnormal conditions. However, I do feel that the diminution in blood chlorides is an indication of the severity of the condition and is intimately related to it. It is important to use this blood chloride level as an indication for initiating and controlling treatment, just as the blood sugar lever is used as a guide in insulin therapy. Whether the chlorides are taken out of the blood by secretion into the intestines, or combined with a toxic substance, such as possibly an amino-acid, and are found in the tissues in this combination, or whether there is some other explanation is a problem for further research, and one we are undertaking at present. There can be no doubt that when, in a patient with functional or organic obstruction of the gastro-intestinal tract, enough sodium chloride is given to bring the level of the blood chlorides up to normal, marked clinical improvement and sometimes recovery of the patient results.

DR. WALTMAN WALTERS, Rochester, Minn.: In the study of any problem, one should sharply differentiate hypothesis and fact. I have shown that the lowering of blood chlorides and the rise in the carbon dioxide combining power of the blood occurring in acute duodenal fistula can be obviated by preventing the loss of gastric secretion by gastrojejunostomy, provided there is no obstruction to gastro-intestinal motility. If there is disturbance of intestinal motility, even though the loss of gastric secretion has been prevented by gastrojejunostomy, the blood chlorides are diminished by their excretion into the entire intestinal tract and their elimination from the body in the feces, urine or intestinal fistulous fluid, if such a fistula is present. In another paper we described such experiments. In the two-stage operation, one eliminates the factor of disturbance of gastro-intestinal motility; consequently blood chlorides are not diminished and a minimal amount of chlorides is excreted in the duodenal fistulous fluid, in the feces and in the urine. On the other hand, if there is disturbance of intestinal motility at the gastrojejunal anastomosis, as may occur in the end-to-end one-stage gastrojejunostomy, the chlorides are poured out into the intestinal tract, and part of these are excreted through the fistula and part

are found in the feces and urine. From our experiments, we believe that the loss of chlorides from the blood in duodenal fistula and also in intestinal obstruction is not the result of a combination of the chlorides with a toxin, but is due to the excretion of the chlorides into the intestinal tract, their discharge through the fistula, or their excretion from the body in the feces and urine. This could explain the lowering of blood chlorides with disturbance of gastro-intestinal motility in animals who do not vomit, such as rabbits. I think we have shown rather conclusively the chemical changes in the blood accompanying the toxemia of duodenal fistula, and that the loss of blood chlorides is due in part to the loss of the acid and chloride of gastric secretion discharged through the fistula in the duodenum. If loss of gastric fluid is prevented by gastrojejunostomy, blood chlorides and the carbon dioxide combining power of the blood do not change provided there is no disturbance of gastro-intestinal motility. If gastro-intestinal motility is disturbed, then the chlorides are excreted in the intestinal tract, to be discharged through the feces or through the urine or through a fistula.

DR. GEORGE W. CRILE, Cleveland: In view of some of the discussions today, I should like to offer a little preliminary statement concerning the action of sodium chloride. In the biophysics laboratories, we have worked out a method of testing the effect of drugs or injuries on the organism of an animal by three of the constants of physics: temperature, capacity and conductivity. I might mention, without going into details, that the injection of sodium chloride is followed by a greater change in the capacity, conductivity and temperature of the leading organs of the body than is the case with any other agent. It produces effects comparable to those produced by epinephrine, the other most powerful drug we have studied. I believe, therefore, that we ought to keep in mind that it is the sodium salt as such that is of value clinically. It is interesting that among all the salts, sodium chloride is the only one the use of which has persisted. As somebody else said during the discussion, it is the most dominant electrolyte in the body. The combination of sodium chloride with dextrose is very interesting. Sodium chloride, we believe, is one of the fundamental factors in the maintenance of the acid-alkali relation, and curiously enough the other fundamental factor is oxidation, which in turn uses dextrose. So the acid-alkali relation is more controlled by that formula of dextrose plus sodium chloride than by any other measures which are generally used. The next point I wish to make is with respect to the intravenous injection of sodium chloride. That can be carried only to a certain point. Some old experiments show that if large quantities of plain water or sodium chloride are given to an animal intravenously, either rapidly or slowly, the animal will die in from six to eight minutes. This death is not due to high blood pressure, because one cannot raise the blood pressure in this way; it is not due to dilatation of the heart; it is not due to a change of water balance of the tissues; it is not due to a dilution of the blood, because one cannot dilute the blood with water, and it is not due to edema of the lungs, for there is little edema of the lungs. It is due to a mechanical interference with the exchange of air on account of the distention of the abdomen, as the result of which the diaphragm and the ribs cannot move. During the war this problem was widely discussed; we tried it out in thousands of cases in the British army and proved that the amount of salt solution taken in will stay in the tissues only in a certain osmotic balance.

Social Heredity and Natural Heredity.—The influence of social heredity is, in a large sense, inversely as the amount and definiteness of natural heredity. The interpretation of the creature's infancy turns on the question of how much the exigencies of future life are to call on him to learn. If a great deal, then we find him born practically helpless and requiring artificial support and attention during a long infancy period. If the young creature is to have a life of relatively unchanging activities with little need for the acquisition of functions not already possessed by the species as instincts, then he comes into the world with ready-made instinctive activities, and can take care of himself independently very early, or even at birth.—Baldwin: Social and Ethical Interpretations, pp. 69-71.

CEREBROSPINAL FLUID PRESSURE

CRITICAL EXAMINATION OF MENSURATION METHODS AND DESCRIPTION OF A NEW INSTRUMENT *

EUGENE S. KILGORE, M.D.
SAN FRANCISCO

Efforts to advance the science of medicine in later years have made ever increasing use of measurements[1]—a trend which is natural and important and which has occurred before in the development of other sciences. But our science, unlike some of the others, as a rule does not permit a high degree of accuracy in its measurements; and we, familiar with inexactness, while sensing the need for quantitative knowledge, have too often been content with needlessly crude methods. Or, what is worse, a crude method is employed, its crudity ignored and its results assumed to be accurate. Extensive clinical application of a measuring device has quite commonly preceded any adequate investigation of the magnitude of its errors. This has been true of blood pressure determinations,[2] and is also true of measurements of cerebrospinal fluid pressure.

Any one who has watched fluid spurt from a lumbar puncture needle when it is first introduced and, after the escape of a small amount, slow up to a gradual drip, must be impressed with the great decrease in pressure which may result from a small withdrawal. And yet, although most writers on the subject have recognized the desirability of getting pressure readings as early as possible during the course of fluid withdrawal, the manometers hitherto used almost always have been designed to absorb some of the fluid before yielding a reading—often several cubic centimeters and usually an unknown quantity. They fall mainly into three groups: mercury U-tube manometers, aneroids or other types of spring gage, and the simple upright tube from the needle to permit observation of the height to which the spinal fluid itself will rise. The first two have met many objections on grounds of the sterilization, sensitivity and reliability of the readings, especially at low pressures, though in France the spring instruments seem still to be much used. Elsewhere the upright tube from the needle has gained favor. Its inside diameter may be as little as 1 or 2 mm. without entailing serious difficulties with capillary attraction; and with such a tube normal or moderately high pressures may be read without withdrawing more than from 0.5 to 1 cc. of fluid. As will be shown later, such a small initial withdrawal is compatible with reasonably accurate results except in certain high tension cases; but it is especially in these extreme cases that accuracy is desirable. This method, of course, does not permit readings below atmospheric pressure.

A device capable of securing prewithdrawal pressure readings was described by Kausch[3] in 1908 and redescribed by Cassidy and Page[4] in 1911. It consists of a simple rubber tube ending in a glass tube above and connected to a side opening from the needle below, the

* From the Department of Medicine, University of California Medical School.

* Read before the Section on Nervous and Mental Diseases at the Seventy-Eighth Annual Session of the American Medical Association, Washington, D. C., May 19, 1927.

1. Kilgore, E. S.: Relation of Quantitative Methods to Advance of Medical Science, J. A. M. A. **75**: 86 (July 10) 1920.
2. Kilgore, E. S.: The Large Personal Factor in Blood Pressure Determinations by the Oscillatory Method, Arch. Int. Med. **16**: 893, 894 (Dec.) 1915.
3. Kausch: Deutsche med. Wchnschr. 1908, p. 227.
4. Cassidy and Page: Proc. Roy. Soc. Med. **4**: 56, 1910-1911.

connection being provided with a stopcock which, when opened, permits direct contact between the spinal fluid and the sterile salt solution previously placed in the tube up to a mark on the glass. The tube is raised or lowered until the salt solution comes back to its original mark on the glass tube, when the elevation of its meniscus above the puncture level indicates intraspinal pressure in terms of salt solution. The one dis-

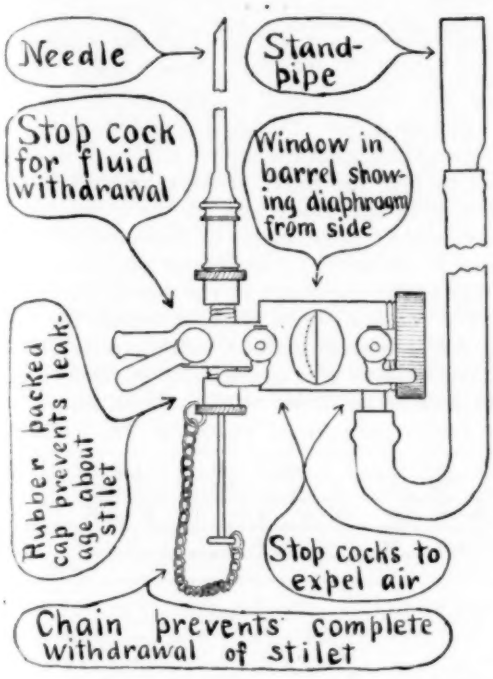
Needle
Stand-pipe
Stop cock for fluid withdrawal
Window in barrel showing diaphragm from side
Rubber packed cap prevents leakage about stilet
Stop cocks to expel air
Chain prevents complete withdrawal of stilet

Fig. 1.—Diagrammatic representation of cerebrospinal fluid manometer.

advantage of the method, which is a serious one and has prevented its general adoption, is its failure to permit the securing of undiluted fluid for examination.

The instrument now to be described [5] was designed to give reliable prewithdrawal pressure readings and also to allow the collection of unadmixed spinal fluid for examination. Figure 1 is nearly self-explanatory. Inside the barrel to the right are two short glass cylinders with ground ends which, being placed end to end, clamp between them a thin rubber disk. Windows in the barrel permit the operator to observe this rubber diaphragm "on edge"; i. e., so that when flat it appears as a straight line. Its smallest "bulge" in either direction is plainly visible. It separates a space on the left communicating with the needle from one on the right which is continuous with the rubber "stand-pipe" tube.

In use the instrument is completely assembled with the needle and boiled. With the stopcocks open, sterile physiologic sodium chloride solution is then forced through all parts of the apparatus until air bubbles are removed; the stopcocks are then closed and enough salt solution is left in the standpipe to reach a convenient level in the glass tube at its upper end. After puncture, the stilet is withdrawn as far as its chain permits. If then the subarachnoid space has been entered, the diaphragm will be seen to bulge, to the right or to the left, depending on the elevation at which the stand-pipe is being held. This elevation is then modified until the diaphragm resumes its neutral position, and the cerebrospinal fluid pressure is then indicated by the elevation of the meniscus in the stand-pipe above the puncture level.

Fluid for examination is withdrawn through the side stopcock at the left. The first three or four drops will be the salt solution originally placed in the needle and proximal chamber of the barrel (the latter can be emptied during the first outflow by elevating the stand-pipe), and a subsequent portion should be used for analysis.

Successive pressure measurements may be made as measured quantities of fluid are withdrawn. And (if desired) intraspinal pressure may be reduced below atmospheric pressure by siphonage or syringe suction; and the degree of negative pressure thus produced may be measured with equal facility by noting the level of the stand-pipe meniscus *below* the puncture level when diaphragm equilibrium is established.

SOURCES AND MAGNITUDES OF ERRORS INVOLVED IN THE USE OF THE INSTRUMENT

General sources of error, such as failure to secure standard conditions affecting the patient, have been well discussed by Pappenheim [6] and others. Suffice it here to say that the patient should be comfortable on his side with the trunk horizontal; the head in normal relation to the trunk (i. e., not bent forward); the abdomen, chest and neck free from constriction; the breathing natural, and with freedom as far as possible from worry or pain. A series of prewithdrawal pressure measurements is desirable to observe spontaneous fluctuations following the puncture and to reach as nearly as possible basal conditions for the patient.[7]

As to the use of the instrument itself, possible sources of error are:

1. The personal factor of the operator; i. e., his accuracy in noting the neutral condition of the diaphragm and in measuring vertically from the puncture level (not always the same as the end of the needle) to the meniscus level. Without investigation this factor appears to be about the same here as with other methods in which one reads the height of a liquid column, except in the case of mercury instruments, with which, of course, any error in reading assumes a thirteenfold importance.

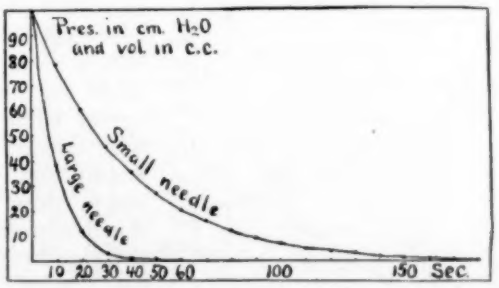

Fig. 2.—Rate of flow of water under various pressures through a large needle (1.04 mm. inside) and a small needle (0.65 mm. inside).

2. Friction, which is almost entirely in the small caliber part of the system, namely, the needle, and is therefore the same as for other methods, except possibly those using the long small caliber upright tube, which may increase this factor. It was measured for needles of various size by determining the rate of water outflow through them under various pressures with the

5. The instrument is made by the Sanborn Company of Cambridge, Mass.

6. Pappenheim: Lumbar Punctures, translated by Caffrey, London, 1925.

7. Solomon, H. C.; Pfeiffer, H. M., and Thompson, L. J.: Am. J. M. Sc. **166**: 341 (Sept.) 1923.

needle horizontal. In figure 2 are shown the results for a rather large needle (1.04 mm. inside diameter) and for a rather small one (0.65 mm. inside). It will be seen that the small needle in the region of zero to 0.5 cm. of water pressure delivers about 0.05 cc. of water per second. As this is about the amount required to make a pronounced bulge in the diaphragm of the instrument, it is clear that error from this source need not be considered unless one is dealing with fluids of greatly increased viscosity, which would interfere still more in most other methods of pressure measurement.

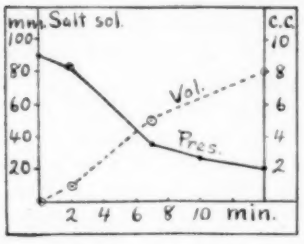

Fig. 3.—Change in pressure with various volumes of spinal fluid removed in a woman, aged 50, with breast carcinoma.

3. Resistance of the diaphragm. When it is remembered that this disk of thin rubber is clamped in place without any stretching, and that the pressure readings in no way depend on its distortion but only on the condition that it is free from distortion in either direction, it will not be surprising that in practice it is found to respond readily to the small pressure fluctuations induced by pulse and respiration. These, in fact, can be measured by noting the elevation of the stand-pipe which results in neutralizing the diaphragm at the crest and again at the trough of these waves, and subtracting the one from the other.

The sensitivity of various weight of diaphragm material was tested with a schema. With the apparatus prepared as in clinical use, the needle was thrust into the thick rubber tube at the lower end of a buret containing water, and the stand-pipe of the instrument was arranged to slide up and down in contact with the buret. Without the fluid levels in buret and stand-pipe having been noted, the latter was moved up and down until the diaphragm did not show bulging; then attention was directed to the two fluid levels and their difference in elevation noted. When a diaphragm made of ordinary dental rubber dam was used, it was found that with a single slow up or down movement of the stand-pipe until the "bulge" disappeared from the diaphragm the stand-pipe might overshoot its mark (buret meniscus) by as much as from 5 to 10 mm. By taking the mean of two readings, one "up" and one "down," accuracy within 2 or 3 mm. could be depended on—an approximation entirely sufficient for most purposes. A very thin diaphragm of condom rubber, however, was found to be about five times more sensitive; i. e., with a single up or down movement of the stand-pipe, its level could be matched to that of the buret within 1 or 2 mm., and the average of two readings, one "up" and one "down" showed errors well under 1 mm. This thinnest rubber is to be recommended when the greatest accuracy is desired. It is easy to replace if necessary; but such a diaphragm, in my experience, has stood many boilings and has never broken during use, since in its small chamber it is well protected from strain. If it did break the only harm done would be dilution of the spinal fluid desired for examination. The sensitivity of the diaphragm may be tested at any time during use by noting the difference between the "up" readings and the "down" readings. A good practice is to make two readings, one "up" and one "down," habitually, and record the mean as the pressure.

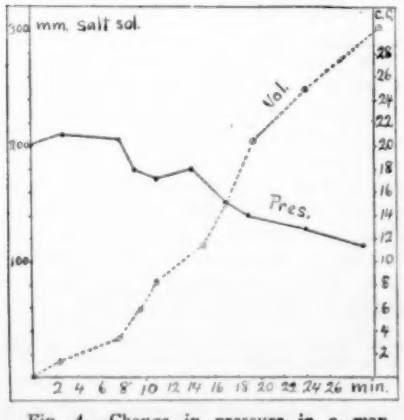

Fig. 4.—Change in pressure in a man, aged 32, with epilepsy.

4. The question of volume disturbance of the contents of the cerebrospinal system in the act of determining the pressure. To test the assumption that there is no appreciable disturbance of this sort in the use of this instrument, the buret schema was again used, the rubber tube at the lower end of the buret being punctured as is the spinal canal in the clinical use of the instrument. When the diaphragm was allowed to bulge to the right, the meniscus in the buret fell from about 0.05 to 0.1 cc., and when at the moment for taking the reading the diaphragm was restored to its midposition, the buret meniscus was brought up to 0.02 cc. above its original level. In other words, there was no loss of volume but a gain about equal to the volume of the needle tip which was inserted, which was, of course, a wholly negligible quantity.

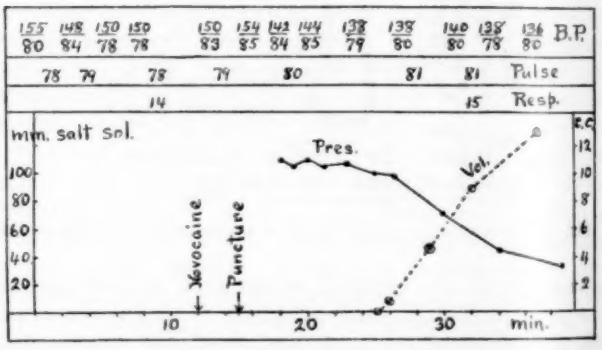

Fig. 5.—Change in pressure in a case of cord compression in a man, aged 57. Blood pressure, pulse and respiration data are included at top of chart.

With these sources of error sufficiently delimited for the instrument, it was used to investigate the important question of the relation between prewithdrawal and postwithdrawal pressure conditions in the cerebrospinal fluid, and especially the rate with which pressure falls with unit volume withdrawals, a question on which depends the interpretation of much of the data already in the medical literature. Experiments were performed with various mechanical schemas to imitate the cerebrospinal fluid space with varying degrees of elasticity and rigidity. These need not be described, since they all confirm what is to be expected; namely, that in a closed water-filled system the fall in pressure caused by removing a given volume of the water is a function of the elasticity of the walls of the system. If it is constructed of iron pipe, for example, the removal of a fraction of a drop will reduce the pressure from an exceedingly high level to zero or far below zero. If the walls are of thin rubber, a large volume can be removed with little effect on the pressure. Walls which "give" considerably under little pressure and proportionately much less under high pressure permit an abrupt fall of the pressure from a high level with the first withdrawal and more and more gradual decrements with subsequent withdrawals.

CLINICAL OBSERVATIONS

A few of the clinical observations are shown in figures 3 to 8. These are selected to show certain types of pressure-volume curves. The patients were all reclining. Figure 3 shows a common downward trend of pressure in a normal subject with a small withdrawal of fluid (here 8 cc. over a period of fourteen minutes). Figure 4 shows a higher initial pressure (200 mm. of physiologic sodium chloride solution), and a more gradual fall even with considerably larger withdrawals (30 cc.). Figure 5 is from a case of cord compression but without complete blockage of the canal. It will be noted that during a preliminary period of observation before fluid withdrawal, although there was some fluctuation of blood pressure attending the puncture, the spinal fluid pressure remained nearly constant until, with fluid withdrawal, it behaved as in figures 3 and 4. Figure 6, on the other hand, shows a marked prewithdrawal fall of pressure over a ten minute interval. This it will be seen was during a period of falling blood pressure, the case being one of arterial hypertension in a diabetic patient. The spinal fluid pressure fell again at about the usual rate as the fluid was

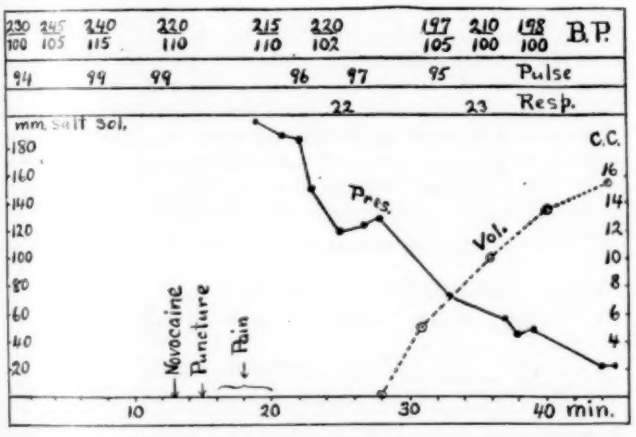

Fig. 6.—Readings in a man, aged 48, with hypertension and diabetes. Fall of fluid pressure before withdrawal was considerable.

removed. Figure 7 (tabes dorsalis) shows a less common type in which, during the withdrawal of 10 cc. in twelve minutes, the pressure of the fluid remained fixed at almost exactly 100 mm.

Figure 8 represents the most important type to illustrate the difference which may exist between prewithdrawal and postwithdrawal pressure measurements. This was a case of tuberculous meningitis with high initial pressure. The time intervals between the successive measurements were about equal; and, to show most clearly the effect on pressure of withdrawing fluid, the amounts withdrawn are shown here as the abscissas and the pressures as the ordinates. It will be noted that with the first cubic centimeter withdrawn the pressure fell from an initial 400 mm. to 320 mm., a drop of 20 per cent. The second cubic centimeter removed made the total pressure decrement 35 per cent, the third 47, the fourth 54, and the fifth 57 per cent. It is safe to say that none of the manometers heretofore in common use would in this high tension case have absorbed less than from 0.5 to 1 cc. before yielding the first reading, and that most of them would have taken a good deal more and would therefore have given readings from 20 to 50 per cent or more below the actual initial pressure.

While a large number of pressure-volume curves from various types of high tension cases are desirable in order to fix standards, it is probable that this curve (fig. 8) represents about what may be expected from the elastic action of the adult encasing tissues when "put on the stretch," as in a severe meningitis; and hence this curve may be of some assistance in estimating what was the probable prewithdrawal pressure in

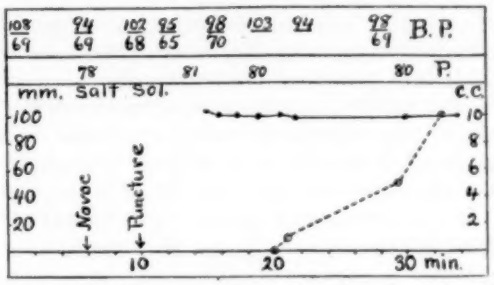

Fig. 7.—A man, aged 43, with tabes, shows almost constant pressure unaffected by the withdrawal of 10 cc. of fluid.

a given high tension case when a succession of postwithdrawal measurements are furnished, provided the amount first absorbed by the instrument is known. Thus, if the curve obtained is found to fit figure 8 fairly well over the range of pressure-volume relations which are known, then the first part of figure 8 would indicate the course probably taken by the pressure in the given case as the fluid was first escaping into the instrument.

For low or moderate tension cases no such pattern would be applicable, for a glance at figures 3 to 7 shows the variability encountered. For such cases it is obvious that prewithdrawal pressures could be estimated much better by charting several postwithdrawal readings, and then extending the curve thus formed backward the requisite distance in the general course it appears to follow.

As to the clinical significance of pressure readings, I have nothing here to offer. With a technic which permits accurate observations of prewithdrawal pressures and variations of pressure dependent on withdrawal (or injection) of known fluid volumes, the field is still a promising one. What type or types of pressure-volume curve occur with spinal canal blockage at various levels, with cerebral trauma, or with coma of various kinds, are some of the questions which should be answered.

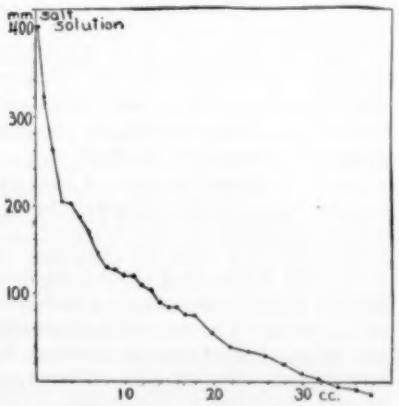

Fig. 8.—A man, aged 30, with tuberculous meningitis, had a very rapid fall of the high initial pressure when withdrawal was begun.

Reference to these figures will show that if Ayala's [8] "rachidian quotient" (amount withdrawn multiplied by final pressure and divided by the first pressure obtained with a postwithdrawal manometer) was figured out for these cases, a considerable variety of quotients could be obtained for an individual case, depending on the

8. Ayala: Ztschr. f. d. ges. Neurol. u. Psychiat. 84: 42, 1923.

amount absorbed by the instrument before the first reading and the amount finally withdrawn. Such short cuts should be discouraged during the present state of our knowledge, in favor of the more laborious process of obtaining complete data, which should include several prewithdrawal measurements and as fully as possible the pressure-volume-time relations during withdrawal.

SUMMARY

A diaphragm and stand-pipe manometer has been designed which permits the measurement of the cerebrospinal fluid pressure before any fluid is withdrawn. Among the disadvantages of most instruments is their inability to record prewithdrawal readings. This error may be small in cases of low or moderate pressure, but surprisingly great in high tension cases. Illustrative cases show various types of pressure volume relations.

490 Post Street.

ABSTRACT OF DISCUSSION

DR. J. J. SAMPSON, San Francisco: In confirmation of Dr. Kilgore's statements as to the importance of the spinal fluid pressure readings without the loss of fluid, I should like to present some observations. Using a three way stopcock attached to the needle and a simple 1.5 mm. bore glass tube manometer with a rubber tube connection, we made spinal fluid pressure readings in approximately 100 cases in Dr. James B. Ayer's service at the Massachusetts General Hospital. There was rarely a loss of more than a drop of fluid, and readings were taken after the withdrawal of each 0.1 cc. of fluid for the first 2 cc. The curves obtained by plotting these readings coincided with the last curves shown by Dr. Kilgore, with the exception that we obtained similar initial sharp falls in cases in which the pressures were not as markedly elevated as he felt was required for such changes in the curve forms. We recognize that our method was not as accurate as his, but we would expect the error to produce an opposite effect. Likewise, our curves seemed to drop in three successive slopes, and we theorized that this behavior was similar to that of the pressure changes on fluid withdrawal from a semielastic sac, at first overdistended slightly beyond its power of average expansion; next contracting in size by its elasticity and maintaining a uniform capacity in proportion to the volume of its contents and, lastly, becoming flaccid as the walls contracted to their maximum and the volume of contained fluid diminished. I agree that in high pressure cases there may be a drop of 50 mm., or more, of fluid pressure, if the first cubic centimeter of spinal fluid is lost. Thus, losses should be prevented or else the erroneous pressures recognized as such.

DR. J. B. AYER, Boston: I can attest that this is no spontaneous work of Dr. Kilgore's because when he was a house officer in Boston he was working on this problem. I did not know until now that his apparatus was on the market, and I shall look forward to purchasing it and trying it out. Until that is done, however, it is rather useless for me to speak of its value. Theoretically, it should be more accurate than the ordinary methods of allowing fluid to run up a tube or even of balancing the pressure with salt solution. I have more or less sponsored a simple pair of calibrated tubes into which the fluid is allowed to run through a three-way cock, and the reading made. I have realized that this was not physiologically accurate, and have on numerous occasions said so. I had previously checked my accuracy in the manner indicated by Dr. Sampson, and also by balancing a column in a closed circuit with salt solution, and had found that the difference between allowing the fluid to run up in a small bore, say, a 1.5 mm. tube, and the pressure reading when a balanced column was used and no fluid escaped was hardly worth considering. I admit, however, that in high pressure cases the difference was greater. In the ordinary pressures, the difference was very slight. I therefore came to the conclusion that the extra effort required to get what we thought was an exact reading was hardly justified, especially as the errors of technic in other respects were greater. These errors are as follows: We all know that if a patient has his head flexed, there is just enough constriction on the jugular veins to cause a rise of 30 or 40 mm. Solomon has gone so far as to say that we should not read the initial pressure until the patient has remained in a fixed position on his side for two or three minutes, to overcome stress and strain of puncture, holding of the breath, and tension from an uncomfortable position; in other words, until he is relaxed, because, as Dr. Kilgore showed in one of his charts, the pressure at first is always greater, and that would be so whether one used an accurate or an inaccurate instrument. Another point, perhaps, is this: While I have not used his apparatus, I should think that it would be a little unwieldly and would demand considerable experience. I imagine that the expense of it is greater than that of a pair of tubes, which is another factor. These points, however, should not concern us if the machine is more accurate and of greater value. However, if Dr. Kilgore has encountered as much resistance as I have to the use of any method for getting pressures, he will, I think, agree that simplicity and cheapness are factors of importance.

DR. EUGENE S. KILGORE, San Francisco: If time had permitted I should have mentioned specifically the work of Dr. Ayer, and especially the influence he has exerted in urging the importance of securing pressure measurements. His small caliber upright tube for direct observation of the height to which the spinal fluid will rise represents to my mind the best type of all the manometers which do not aim at absolute prewithdrawal determinations. With such a small tube, readings are obtained in the great majority of cases by withdrawal of not more than 0.5 cc., and the charts that I have shown with one exception show that the error from such a loss would be negligible. The exception is the really high pressure case. In the last figure shown with an initial pressure of 40 cm. of water, a tube with an internal diameter of 1.5 mm., together with its coupling to the needle, would have taken about 1 cc. before the fluid registered its level, and this much, the results in this case show, would have introduced an error of 20 per cent.

THE DIFFERENT TYPES OF DEFECTS OF THE FIELD OF VISION*

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Among the most frequent and characteristic types of defects of the field of vision is the so-called defect in the bundle of nerve fibers which arises as a consequence of the course of the nerve fibers across the retina. From the nasal half of the papilla they extend radially, whereas from the upper and lower edge they extend in large curves above and below the macula.

The upper and lower bundles of nerve fibers meet in the temporal part of the retina. The horizontal meridian is a rectilinear "raphe" which from the macula extends quite out to the temporal meridian of the retina (fig. 1). If, now, such a bundle is injured, for example, at the edge of the papilla, a defect will appear corresponding to the whole section of the retina which is served by the respective bundle, and the defect will therefore have the form of the projection of the bundle on the visual field.

An interruption at the nasal edge of the disk will therefore produce a radial, sector-shaped defect (fig. 2*A*), the apex of which will lie in the blind spot. Correspondingly an interruption at the upper edge of the papilla will produce a characteristic arched scotoma encircling the macula and terminating in the temporal horizontal meridian (fig. 2*B*). If the defect is broader it will of course open into the periphery of the visual field, and the rectilinear limit corresponding to the raphe

* Read before the Section on Ophthalmology at the Seventy-Eighth Annual Session of the American Medical Association, Washington, D. C., May 19, 1927.

which I have described under the term "the nasal step" may then appear within the range of many degrees (fig. 2 *C*). Under certain circumstances the connection between the defect and the blind spot cannot be proved and in such case the nasal step will be almost the only, but also sufficient, proof that the defect of the visual field has originated in a defect in the nerve fibers. In such a case the nasal limit of the visual field will be noticed to have a vertical course toward the horizontal meridian and thereupon, so to say, make a step sideways and again continue its almost vertical course (fig. 2 *D*). Such an isolated appearance of a nasal step will, of course, occur frequently when the lesion is not localized to the edge of the papilla but extends farther back into the visual nerve. This will be better understood by imagining the horizontal meridian of the visual field converted into a narrow wedge-shaped gap reaching to the point of fixation.

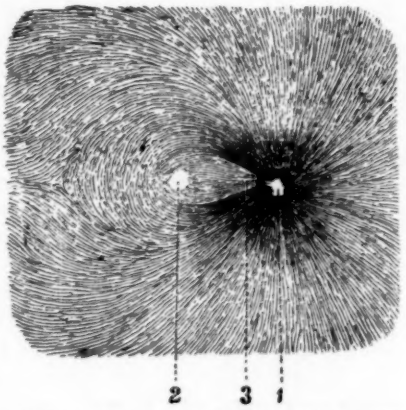

Fig. 1.—The course of nerve fibers across the retina.

It will then be seen that this gap, in which the nerve bundles terminate, actually forms a part of the outer limit of the visual field so that the macula, in this manner, lies in the edge of the visual field. Corresponding to this the macula fibers lie in the visual nerve embedded between the fibers of two quadrants of the field, which are therefore separated by an anatomic interval. This makes it possible that the fibers of each quadrant of the retina may be injured separately and this constitutes the possibility of an isolated nasal step (fig. 3).

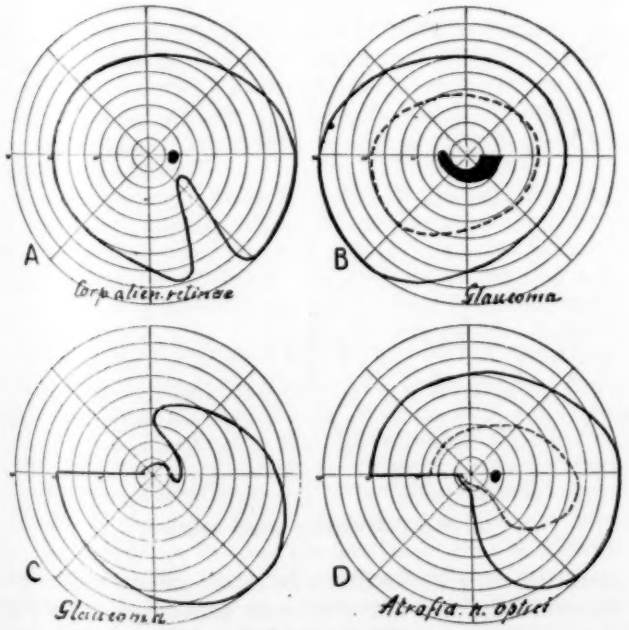

Fig. 2.—Effects of various injuries to nerve bundles.

If the whole bundle of nerves is only amblyopic the effect will, of course, be strongest where the function is physiologically smallest, and, as the bundle of nerves spreads most at the end of the bundle along the raphe, an absolute defect can appear in that part of the visual field corresponding to it, even when it is difficult to prove the defect near the papilla.

Defects in the nerve bundles of the kind here discussed occur in a great number of diseases, of which I shall mention examples of the most important.

The acute circumscribed exudative retinochoroiditis described in Oliver and Norris' handbook is an acute inflammation of the choroid which destroys the retina lying before it and, therewith, also the layer of nerve fibers, whereby a great defect in the visual field occurs peripherally to the choroiditis. This defect in the visual field is surprising, as it by no means corresponds to what should be expected after the ophthalmoscopic picture was first described by Harry Friedenwald of Baltimore, and it forms the most characteristic symptom of this otherwise very typical disease. The other well known symptoms are opacity of the vitreous body, descemetitis and spontaneous recovery, but with a tendency to local relapse. This tendency to a relapse partly causes groups of choroidal atrophies.

Glaucoma is the disease with which there most frequently is an opportunity to observe defects of the bundles of nerves. The defects undoubtedly arise because the nerve fibers are overstretched into the wall of the glaucomatous excavation, and, for some anatomic reason or other, this first affects the fibers situated in the upper or lower wall of the excavation. Therefore, the glaucomatous defect of the field almost always commences as a curved scotoma above or below the point of fixation, which gradually widens to a nasal defect ending in a nasal step.

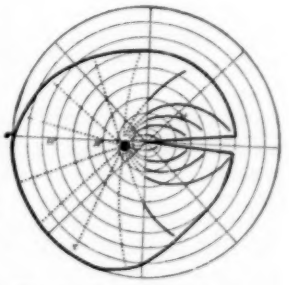

Fig. 3.—Isolated nasal step.

The defect in the visual field caused by glaucoma always has its origin in the wall of the excavation and is, therefore, always a defect of a bundle of nerves, but it often calls for an exact examination to prove it partly because the characteristically curved scotoma can be very narrow, partly because the general, meridional movement of the test object causes the nasal step to be overlooked. The proving of both these forms of defects calls for a circular movement of the test object. At the initial stage of glaucoma its defects are often relative and are therefore more easily proved by Bjerrum's method (fig. 4); often a test object of usual size may show the nasal step, and only a smaller size of object will show the curved scotoma.

At further advanced stages two defects of the nerve bundles will arise upward and downward, so that the visual field is split into a small central part and a larger temporal part, and at the final stage one of these disappears, most frequently the temporal part remaining.

With glaucoma, the type of visual field which I have described is extremely common or even constant. But it has the peculiarity that we do not find it unless it is especially searched for and this is in fact easy to see. The arched scotomas which lead to the blind spot are often not broader than the blind spot itself and therefore they are even as easy to be overlooked as the blind spot. How often should we find the disk scotoma by the usual testing of the field if we did not before have the knowledge of its position? The matter stands quite

in the same way with the nasal step, the rectilinear limit of the field in the nasal meridian. By the usual meridional testing the object follows in those cases along the actual limit of the field and we get easily an accidental intermediate value. If the limitation line on the diagram is drawn from this intermediate value to the limit in the meridian above and below, an inclined line appears instead of a terrace, and a typical field of vision with a nasal step is replaced by a field showing

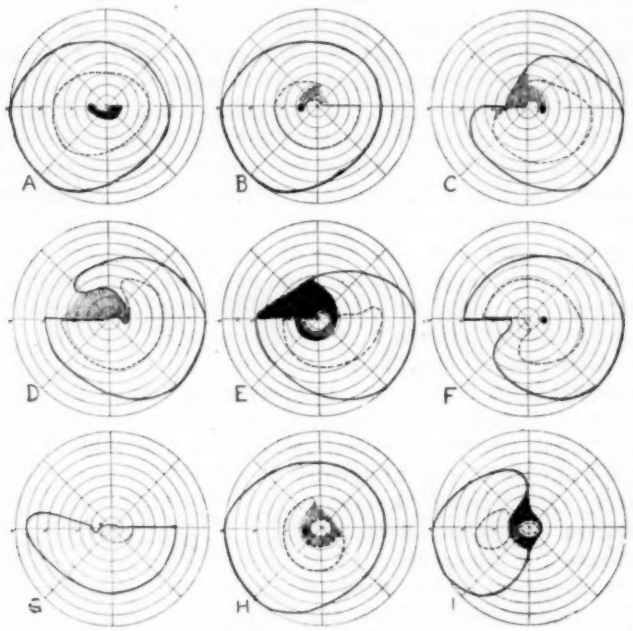

Fig. 4.—Effects of glaucoma.

a nasal constriction upward or downward. To point out the narrow scotomas it is necessary that the test object be conducted circularly and the demonstration of the nasal step requires a vertical testing.

In fact, the frequency of the nerve bundle defects is too great with glaucoma that I should maintain that every case of chronic glaucoma at a certain stage will show this type of field of vision.

NEURITIS OPTICA; ATROPHY OF THE VISUAL NERVE

Although it would be natural to expect that in the diseases proper of the visual nerve we should find the range where the defects of the nerve bundles in the field reach their maximum of frequency, this is not at all the case. It is by no means rare to meet typical forms of the visual field, but in general these diseases are too diffusely localized in the field to permit the defects of the nerve bundle to determine definitely the results of the examination.

This is especially the case with tabetic atrophy, in which it is even exceptional to find a nasal step or a defect in connection with the blind spot. (fig. 5) shows a number of positive observations, in the last of which it is not the defect of the visual field but the preserved color field (for red) which shows the form of the retinal bundle of nerve fibers.

VASCULAR DEFECTS

As the course of the arteries in the retina is roughly the same as that of the nerve fibers, it is natural that deficiency in the visual field caused by an arterial occlusion will resemble a defect of a nerve bundle; and as an ischemia, above all, will affect the layer of nerve fibers, a vascular defect will for this reason be identical with a nerve bundle defect, as every bundle of nerve fibers which even for a short distance comes within the range of the infarct will be unable to function. The deficiency in the visual field will for this reason always be larger than the infarct. In most cases of branch embolism, therefore, vascular defect and nerve bundle defect will mean the same thing.

In a single point there appears a characteristic difference. As the cones in the upper half of the macula have their corresponding ganglion cells lying a good piece above the macula, owing to the Henley layer of fibers, an isolated embolism in the upper branch of the artery will destroy all the connections of the upper half of the macula with the visual nerve without, to the smallest degree, affecting the connections of the lower half. The vascular defect, therefore, extends right into the fixation point; but, notwithstanding this, the power of vision will often be fully normal. The macula has been halved in the fullest sense of the word; possibly the patient may state that he sees only the lower part of a letter of the line 6/6. With real nerve bundle deficiency, almost always, a small preserved part remains around the fixation point, and if, in a single case, the limit should pass the fixation point, the power of vision will always be considerably reduced (fig. 6).

If occasionally total blindness is observed in a case of embolism of the central artery, nothwithstanding the fact that a cilioretinal artery has ophthalmoscopically escaped the embolism, this has its reason in the circumstance that the nerve fibers from the cilioretinal neighborhood must pass in the ischemic part between the edge of the papilla and the lamina cribrosa.

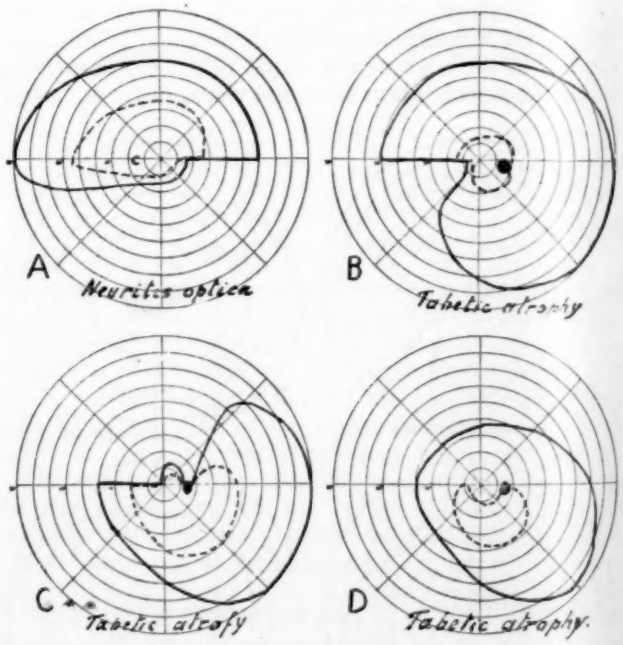

Fig. 5.—Effects of tabetic atrophy.

CONDITIONS RESULTING FROM ARRANGEMENT OF FIBERS

The fact that a semidecussation of the visual path in the chiasm results in the appearance of the bitemporal and homonymous hemianopia in the visual field has for many years been known in general medicine. I shall here put forth more special conditions in which the arrangement of the fibers in the visual path gives rise

to special types of the visual field with practical diagnostic importance.

It is known with certainty that the crossed macula fibers form the rearmost angle in the chiasm. This makes it possible for an ailment that affects the chiasm from its rearmost angle to begin with a bitemporal central scotoma. This is fully in accordance with the clinical observation that the bitemporal central scotoma is a frequent, initial symptom of tumor of the hypophysis.

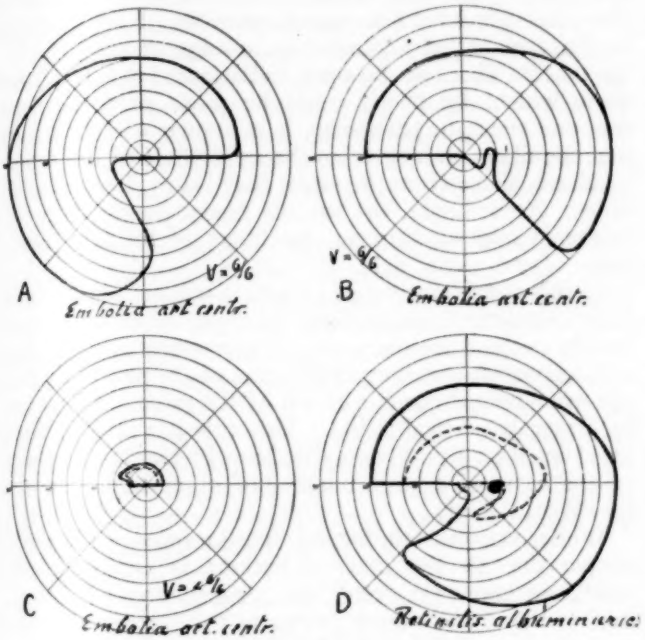

Fig. 6.—Vascular defects.

When there is a suspicion of a tumor of the hypophysis, it is therefore not sufficient to examine the temporal periphery of the visual field. A special examination for temporal scotoma will be required, in particular, because there are few subjective symptoms, as the deficiency is covered by the nasal halves of the visual field.

Only apparently related to this is the onesided temporal central scotoma. This infrequently observed form of scotoma has received from Traquair its characteristic name "junction scotoma" because its origin must be looked for in a focus at the junction of the visual nerve at the chiasm; that is to say, in one of the forward corners of the chiasm (fig. 7 *A*). This is in near relation to and can even also pass over into the much more important three-quadrant scotoma (fig. 7 *B*) with which it has in common that a scotomatic type is generally not diagnosed unless an effort is made to ascertain its form; it is often taken to be a common central scotoma of the optic type. The visual acuity may serve to call attention to the circumstance that a chiasm-scotoma may be suspected, as naturally it most frequently will be better at a three-quadrant scotoma than with the ordinary central scotoma; at all events, the share of the one quadrant in the fixation point is to some extent preserved.

This form of scotoma has been specially studied by Traquair. It is characterized by one of the nasal quadrants of the visual field projecting like a peninsula into the otherwise circular scotoma, always with rectilinear outlines, in both the vertical and the horizontal meridian. That the rectilinear vertical part of the outline is a hemianopic limitation is at once clear. The horizontal part of the outline is an expression of the fact that the retinal quadrant division of the uncrossed bundle of nerve fibers which in the visual nerve caused the nasal step has not dissolved in the chiasm.

That the latter really is the case is evident from the examination of the visual field in cases of diseases of the chiasm as they have chiefly been performed by Rønne and Traquair whereby it has been found that it is possible to trace the arrangement of the retinal nerve fibers both in the crossed and in the uncrossed bundle through the form of the limits of the visual field. This is illustrated by figure 8, of which the latter shows a case with a regularly preserved nasal quadrant of the field with exactly rectilinear horizontal limitation, a curved deficiency proceeding from the blind spot, which is discontinued exactly in the vertical meridian. Corresponding visual fields are found in great number by Traquair. The visual field is affected also in a quite different manner by details in the arrangement of the system of fibers in the chiasm. It has been shown by Josefson (1903), Traquair (1910) and Cushing and Walker (1915) that tumors of the hypophysis, during their growth, affect the quadrants of the visual field in a law-bound order; namely, upper temporal, lower temporal, lower nasal and, lastly, upper nasal quadrant of the field. Of this order, the upper nasal quadrant most constantly remains the longest. This must be an expression for the order in which the tumor reaches the different systems of fibers in the chiasm, and the regularity is there based on a cooperation between the inner anatomy of the chiasm and the uniform growth of the tumor of the hypophysis.

Behind the semidecussation we meet the homonymous hemianopia in cases of path interruption in the optical tract. The only pure visual field symptom that characterizes the hemianopias of the tract as such is, in my opinion, the incomplete congruence of the partial hemianopic defects. Of course, the incomplete congruence of the hemianopic defects can be due to faults in the examination and fatigue of the patient. As such faults may be of very considerable size, the diagnostic importance of the incongruence in the form of the visual field defects must be judged with some carefulness. Therefore the diagnosis hemianopia of the optic tract receives special support when the central visual power is found to be reduced. As the crossed macula bundle lies in the rear angle of the chiasm, a passing over of the disease to one of the rear corners of the chiasm will first appear as a reduced visual power of the eye on the same side, or often of both eyes.

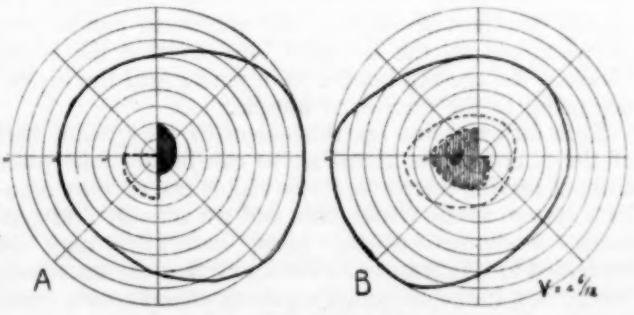

Fig. 7.—One-sided temporal central scotoma.

We have seen that the characteristic arrangement of the retinal nerve fibers may still be proved in the chiasm by the form of the defects in the visual field both in the nasal and in the temporal half. But as fibers from corresponding retinal points meet in the occipital lobe, at

least one of the systems of fibers of the two retinal halves must be rearranged, as the two halves have a common architectonic structure in the occipital lobe. Our purely anatomic knowledge of the architecture of the optic radiations is very small, but in my opinion the examination of the visual field is a sufficiently distinct answer to this anatomic question. It is a daily

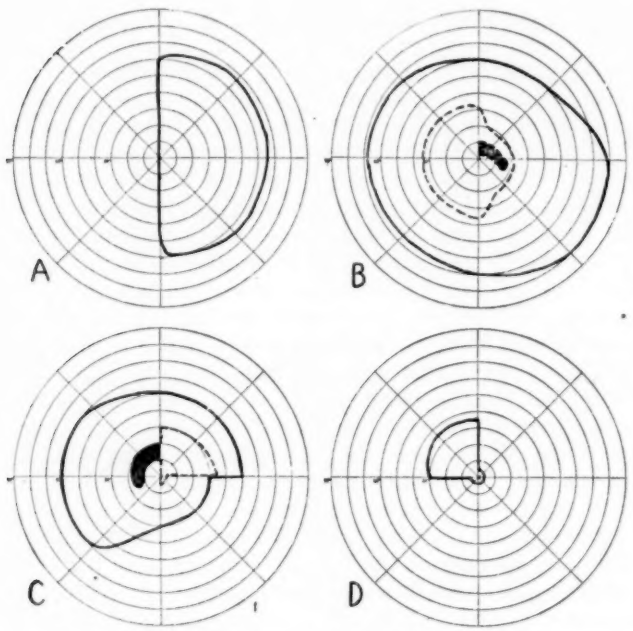

Fig. 8.—Defects in cases of disease of the chiasm.

clinical experience that we not frequently meet homonymous quadrant hemianopia with an oblique limit line and, not so rarely, we find that the limit line exactly follows the horizontal meridian, so that the division of the quadrants is almost mathematical. This could hardly be the case if the limit were determined by an accidental limitation in consequence of a softening of the brain. It seems logical to assume that there must exist a certain topographic anatomic condition as cause for the frequency of the quadrant hemianopia. But in this case there surely cannot exist other possibilities than that the retinal quadrant division of the uncrossed bundle may be preserved in the occipital lobe so that the nerve fibers of the crossed bundle have rearranged themselves according to the uncrossed bundle.

Such an extensive rearrangement of the greater half of the fibers of the visual nerve can hardly take place without leaving microscopically visible traces in so regular a system as the visual path, and we actually find anatomic conditions which, quite naturally, may be explained in this manner. We know that the uncrossed bundle has, in the chiasm, a regularly closed course from the visual nerve to the optical tract on the same side; the crossed bundle dissolves, therewith forming an enormous loop by some of the fibers from the right opticus, on their way to the left tract, first passing over in the root of the left opticus, while others follow the opposite route to the right tract, from which, through the rear chiasm angle, they reach the left tract. This very complicated course of the fibers in the chiasm, which for many years even caused dispute whether there altogether existed a half crossing in the chiasm, in reality arises exclusively from the crossed bundle. This in other ways incomprehensible and apparently unnecessary circuitous route appears in a different light when considered in connection with the possibility that the architecture of the crossed bundle shall at this point be completely rearranged.

In the retina the quadrant division of the fiber system is determined thereby, the macula fibers are interposed between the fiber masses of the upper and the lower quadrant, and if this arrangement is preserved throughout the whole of the remaining visual path, the consequence is that also in the occipital lobe it is the intermediary position of the macula fibers which renders the exact quadrant hemianopia possible. It is true that we have no direct anatomic knowledge of the place of the macula fibers in the optic radiations, but there is no place which, by itself; could be more probable than this one since, in particular, it is known with certainty that the fibers coming from the upper half of the retina lie above, those from the lower half below, in the radiations. Accordingly, the macula fibers should form an anatomic interval between the fibers of the two quadrants of the visual field.

If this consideration is correct, it will entail the clinically important consequence that a quadrant hemianopia in the closest meaning of the word, with a sharp and accurately rectilinear limitation of the partial defect, can arise only through a lesion of the radiation, but not by a merely cortical lesion. This rule has already been proclaimed on a purely empiric basis by Gordon Holmes, on the basis of a large number of observations during the World War.

While, notwithstanding all, our knowledge of hemianopia due to the optic radiations is comparatively small, we know far better the consequences of softenings in the visual center proper in the cortex. In particular, through Henschen's numerous researches, the

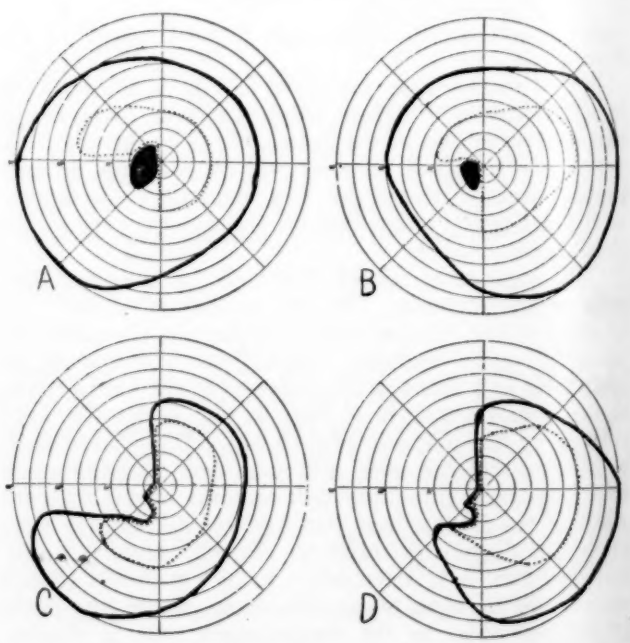

Fig. 9.—Defects caused by cortical softening.

projection of the visual field on the cortex of the brain is known accurately. This center covers both lips of the calcarine fissure; the upper half of the visual field (the lower half of the retina) has its place in the lower lip of the calcarine, the lower half of the visual field, in the upper lip of the calcarine, whereas the center of the macula lies exactly in the pole of the occipital lobe, where it extends a short distance over to the convex side of the brain. I shall only mention Willbrand's observations which, clearer than any other

case, show where, on the cortex, to look for the macula center.

A woman, in a fall, was injured by a screw, 13 mm. long, which was driven so far into the left side of the back of her head, penetrating the skull, that it had to be pulled out with a pair of tongs. As a sign that it had injured the cortex in the point of the occipital lobe, a permanent hemianopic scotoma was observed immediately below the fixation point.

Fig. 9 shows two visual fields in consequence of cortical softening; the one shows one of the rare hemianopic scotomas which are easily overlooked because the visual power is normal and the visual periphery free; it is really only the hemianopic disturbance of the reading which will lead to the correct diagnosis of the case.

The other illustration shows a quite irregular but strictly congruent hemianopic defect. As the color limits indicate, there exists a quite sharp limit between the visual field lost and that retained, which in my opinion, is a sign of the purely cortical character of the condition. The same case showed also another circumstance which pointed to the cortex as the seat of the condition; namely, phosphenes and hallucinations restricted to the defective parts of the visual field. These were undoubtedly due to abnormal irritations from the destroyed visual center which were sent to the higher psychic centers.

Amagertorv 33[2]

ACUTE DISTURBANCE OF LUNG FUNCTION IN PNEUMONIA

METHODS OF OXYGEN TREATMENT*

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NEW YORK

Lobar pneumonia is defined as an acute infection characterized by an inflammation of the lungs and a bacterial toxemia. It is customary to consider the disease mainly from anatomic and etiologic points of view. Thus, a case of pneumonia is referred to as presenting involvement of the right lower lobe or left lower lobe due to pneumococcus type I or type II, as the case may be. It is not likely to be considered from the point of view of functional interference with the normal function of the lung; namely, the diffusion of oxygen and carbon dioxide.

The physician who treats heart disease is no longer satisfied with anatomic and etiologic diagnoses, such as mitral stenosis due to rheumatic fever, but wishes to know in addition whether cardiac insufficiency is present. One might point also to the interest in renal function in nephritis and to pancreatic function in diabetes. In the same spirit, it seems reasonable to ask for a consideration in lobar pneumonia not only of the anatomic involvement and etiologic organism but also of the degree to which the function of the lung itself is impaired.

When extensive infiltration into the lungs has taken place and the alveolar space is in large part occupied by purulent exudate, it is not surprising that the diffusion of oxygen from the air to the blood has been diminished, with a resultant lack of oxygen in the arterial blood and in the tissues of the various organs. When this condition is of abrupt onset it may be termed acute pulmonary insufficiency or acute oxygen want due to the failure of the lung to transmit its normal supply of oxygen through the alveolar membrane. Disturbances in function of the heart, kidneys and pancreas are fraught with dangerous consequences; it seems natural to expect that a crippling of the function of such a vital organ as the lung should also lead to harmful effects.

In the accompanying tabulation the symptoms of lobar pneumonia have been classified according to their possible modes of origin, the first group due to local effects

Classification of Symptoms of Lobar Pneumonia According to Possible Mode of Origin

Local Pulmonary Symptoms	Toxic Symptoms	Pulmonary Insufficiency Symptoms (Anoxemia)
Cough	Headache	Headache
Sputum	Nausea	Nausea
Pleuritic pain	Vomiting	Vomiting
Expiratory grunt	Irrationality	Irrationality
Edema of lungs	Delirium	Delirium
Shallow breathing	Weakness	Weakness
	Rapid pulse	Rapid pulse
	Rapid breathing	Rapid breathing
	Shallow breathing	Shallow breathing
	Chill	
	Fever	
	Dyspnea	
	Prostration	
	Jaundice	

in the lung caused by the presence of an inflammatory exudate, the second group due to the toxin of the infecting organism, the third group due to interference with the physiologic function of the lung and the resultant acute pulmonary insufficiency or acute oxygen want. It is seen that the toxemia of the pneumococcus may be the cause of most of the symptoms. The harmful effects of impaired lung function (oxygen want) are present combined with the symptoms of bacterial toxemia in those cases in which the normal diffusion of oxygen through the alveolar membrane is prevented by extensive consolidation or edema. These cases are distinguished clinically by cyanosis or leaden-gray pallor. It is important to remember that cyanosis may be absent in severe anemia as a result of the lack of sufficient hemoglobin to transmit the bluish color. Pneumonia in anemic patients may impose an excessive degree of anoxemia, for the mechanism that supplies oxygen to the tissues is already severely crippled. The symptoms that are dependent on acute anoxemia of the degree which occurs in pneumonia have been derived from chamber experiments (Barcroft, Haldane and others) and also by ascent to high altitudes.

In addition to the symptoms of oxygen want that may be produced in normal individuals there is evidence derived from the effect of acute anoxemia on experimental animals. As the amount of oxygen in the arterial blood was frequently not determined, a precise comparison between the effects of experimentally induced anoxemia with clinical anoxemia cannot always be elicited. I shall limit myself to a few reports in which the symptoms of oxygen want were produced by an oxygen deprivation of similar degree to that which occurs in pneumonia.

Although moderate degrees of oxygen want do not consistently lower the total metabolism, as represented by the oxygen consumption, it must be remembered that a normal total intake does not indicate that the oxygen supply of all the single organs of the body is normal. Thus Verzar,[1] studying the effect of decreased oxygen tension of the arterial blood, found that the oxygen

* Read before the Association of American Physicians, May 3, 1927.
* From the Department of Medicine, Columbia University College of Physicians and Surgeons, and the Presbyterian Hospital.

1. Verzar, F.: The Influence of Lack of Oxygen on Tissue Respiration, J. Physiol. **14**: 39, 1912-1913.

intake of the submaxillary gland was not changed, that of the gastrocnemius muscle decreased, and that of the kidneys increased. He was inclined to think that the conditions in the heart muscle were similar to those found in the gastrocnemius muscle. Fatty degeneration of the heart and other muscles has indeed been reported as a result of severe oxygen want.[2] (It may be mentioned in this connection that muscle fatigue is one of the early and constant symptoms of oxygen want.) Recent work by Resnik [3] on the heart of the atropinized dog showed that moderate anoxemia (arterial saturation of 80 per cent) causes a prolonged P-R conduction time, an increased tendency to auricular fibrillation under faradic stimulation, and a slight tendency to intraventricular block effects. Resnik and Keefer [4] present expermimental evidence for believing that the jaundice of lobar pneumonia is in part due to anoxemia, as increased bilirubin content of the serum and central necrosis of the liver lobule appear as a result of it in experimental animals. The increased blood flow in experimental pneumonia in dogs was thought by Harrison and Blalock [5] to be due essentially to their arterial anoxemia.

A moderate impairment of lung function thus provokes a certain group of symptoms in normal human beings and in animals. With these facts in mind, I present a new instance of acute oxygen want in pneumonia as a result of the abrupt withdrawal of oxygen therapy before the disease process in the lungs had cleared up. In previous papers I [6] have discussed the symptoms that are apt to be ameliorated by oxygen treatment; in the present paper I shall refer only to the symptoms that follow the cessation of oxygen treatment in severely ill patients. Of eight cases that have been observed, five are reported here.

REPORT OF CASES

CASE 1.—A boy, aged 14 years, became ill with fever, cough, and pain in the side. He developed consolidation of the right lower lobe, which extended subsequently to the right middle lobe, the right upper lobe and the left lower lobe. The sputum and blood contained pneumococcus type III. The boy was deeply cyanotic, prostrated, toxic and delirious. He was put in an oxygen tent, the concentration of which had to be raised from 40 per cent to 55 per cent to keep him free from cyanosis. On the fifth day of oxygen treatment, the seventh day of the disease, the tent was removed for ten minutes. At the end of that time his face and hands had turned blue, he was excessively dyspneic, the respiratory rate rose from 44 to 60 and the pulse increased from 130 to 160. The tent was then replaced, and in half an hour his condition returned to that present before the withdrawal of oxygen.

CASE 2.—A man, aged 50, was sick with fever, cough and prostration of two weeks' duration. He was known to have had bronchiectasis for one year. On admission he was deeply cyanotic, dyspneic and toxic. The lung signs gave evidence of bronchiectatic cavities and a diffuse bronchopneumonia. He was put in an oxygen tent with a concentration of 40 per cent of oxygen. At the end of seven days he was free from cyanosis, moderately dyspneic, very toxic and stuporous. The tent was removed. Four hours later, he was deeply cyanotic, the hands and face were both blue, he was gasping for breath, he was very restless and he was trying to get out of bed. His pulse had risen from 116 to 152 and the respiratory rate from 36 to 50. From a condition of comparative comfort he had passed into one of acute distress, restlessness and imminent collapse. He was transferred to the oxygen chamber, and in three hours after 40 per cent of oxygen had been established, his condition returned to that before the removal of the tent.

CASE 3.—An infant, aged 1 year, was taken sick with fever of three weeks' duration. She was very dyspneic and cyanotic. The respiratory rate was between 50 and 70, the pulse between 150 and 160. The lungs showed crepitant and subcrepitant râles throughout both sides of the chest. At the end of twelve days in the chamber, the râles in the chest were more numerous, and the fever continued high. The hemoglobin was 35 per cent and the red blood cells 1,900,000. She was taken out of the chamber for a transfusion, and died in the nurse's arms five minutes later.

CASE 4.—A boy, aged 14 years, was operated on for acute appendicitis and two days later for general peritonitis. Subsequently he developed signs in the right posterior chest indicative of consolidation and became markedly dyspneic, moderately cyanotic and prostrated. He was put in an oxygen tent at a concentration of from 40 to 50 per cent of oxygen. Later he developed consolidation of a part of the left lower lobe and an empyema of both sides of the chest. The first chest drainage was done with the patient in the tent, the second with the patient breathing 50 per cent of oxygen with the anesthetic. A third chest drainage was necessary for a pocket which formed later, and a fourth operation for a subphrenic abscess. After the patient was in the tent for two weeks, the tent was removed for half an hour. He became cyanotic and increasingly dyspneic, and asked to have it put on again. His pulse had risen from 120 to 134, the respiratory rate from 40 to 50. At this time there was considerable involvement of the chest. From then on, his lungs began to clear. During the next week, the tent was removed daily for variable periods, and on the twenty-first day of residence in the tent was removed permanently without definite effect on the patient.

CASE 5.—A child, aged 3 years, was sick for three weeks with fever, cough and prostration. She had been exposed to whooping cough. Symptoms began four days after a tonsillectomy. She was extremely dyspneic, moderately cyanotic and prostrated. The lungs showed scattered râles in both sides of the chest. At the time she was placed in the oxygen tent, her pulse was between 180 and 190, the respiratory rate between 80 and 90. The oxygen concentration was maintained the first two weeks at 50 per cent. During this period it was observed that when she was taken out of the tent for a few minutes when the bed was being made, she became cyanotic and breathed with more difficulty. The oxygen concentration was lowered to 40 per cent on the following week. The lung signs began to clear at this time, and on the twenty-fourth day of residence in the tent were completely absent. The temperature was approximately normal but the pulse and respiration were still somewhat elevated, particularly after severe coughing spells. The oxygen concentration was lowered to 30 per cent for thirty-six hours, and the patient then removed from the tent without definite change in her condition. The patient was in the tent for four weeks, the longest case on our records. The previous patient was in a tent for three weeks, the next longest case of oxygen treatment.

COMMENT

The existence of a clinical disturbance of this character following the withdrawal of oxygen therapy indicates that the inhalation of oxygen in cases of extensive infiltration into the lungs, marked cyanosis and dyspnea may prolong life. This is borne out by studies that I have conducted on experimental pulmonary tuberculosis in rabbits. Animals that were kept in a chamber with 60 per cent of oxygen were alive a month and a half longer than similarly infected animals in room air. After the control animals had died, the oxygen treated animals showed dyspnea and cyanosis when the lid of the chamber was removed in the morning for the insertion of food. When the lid was

2. Von Schrötter, Herman: Der Sauerstoff in der Prophylaxe und Therapie der Luftdruckerkrankungen, Berlin, A. Hirschwald, 1906.
3. Resnik, W. H.: Effect of Anoxemia on the Heart, J. Clin. Investigation **2**: 93 (Oct.) 1925.
4. Resnik, W. H., and Keefer, C. S.: J. Clin. Investigation **2**: 375 (April) 1926.
5. Harrison, T. R., and Blalock, A.: Cardiac Output in Pneumonia in Dog, J. Clin. Investigation **2**: 435 (June) 1926.
6. Barach, A. L.: Methods and Results of Oxygen Treatment in Pneumonia, Arch. Int. Med. **37**: 186 (Feb.) 1926.

replaced and the oxygen concentration elevated, their acute dyspnea subsided and cyanosis was relieved. When they were finally removed from the chamber, all died within six hours from progressive oxygen want.[7] (The tuberculous lesions steadily progressed as life was prolonged.)

The occurrence of functional failure of the lungs after removal from an oxygen environment does not indicate that the patient has become accustomed to a high oxygen atmosphere and cannot therefore adapt himself quickly to a lower one, for severely ill patients who no longer suffer from anoxemia may be abruptly withdrawn from a high oxygen atmosphere without ill effect. If sufficient resolution of the pulmonary pathologic condition has taken place so that the arterial blood can be saturated above 90 per cent with 21 per cent of oxygen (i. e., room air), no harmful consequences can be expected from the removal from a 40 or 60 per cent oxygen environment. I have repeatedly removed patients from high oxygen atmospheres without ill effect. The cases here reported, it must be remembered, represented the severest types encountered. The patients were removed for purposes connected with the management of their treatment before this type of reaction was anticipated or known. As a result of this experience the oxygen concentration is lowered gradually or the tent removed for short periods and the patient carefully watched. The safest procedure is to keep the patient in the oxygen environment until he is beyond the acutely dangerous stage.

In unpublished experiments (in collaboration with Dr. Draper) normal rabbits were kept in 60 per cent of oxygen for from four to eight months for twenty-two out of the twenty-four hours. When they were removed in the morning for cleaning the chamber and insertion of food, this acute disturbance was not observed. However, in a study by Campbell,[8] hyperpnea was observed in normal rabbits after removal from an oxygen chamber in which they had been kept continuously for six weeks. It is probable that our animals failed to develop any evidence of acclimatization to high oxygen because they were taken out of the chamber for two hours daily. For the relatively short periods in which pneumonia patients are kept in an oxygen environment, acclimatization is not to be expected. In the fifth case of this series, the patient was in the tent for four weeks at an oxygen concentration between 40 and 50 per cent. When her lungs were clear, the oxygen concentration was lowered to 30 per cent for thirty-six hours and the tent abruptly removed without signs of dyspnea or definite elevation in pulse rate or subjective discomfort. If the acute anoxemia reaction described in these cases were due to acclimatization, this patient would be expected to have the severest example of it. However, as in other cases of the same type, she showed signs of a reaction when the tent was removed during the period of impaired lung function, and none at the termination of the disease when the lung function was normal. In her case, the reaction was not allowed to progress beyond slight cyanosis and slight acceleration of the pulse rate. She was not out of the tent for more than five minutes daily.

When a patient becomes cyanotic during the course of lobar pneumonia, it generally signifies the onset of an advance in consolidation, beginning edema of the lungs or cardiac failure. If oxygen treatment is begun at this time, little improvement may be observed while the pathologic process is progressing. Nevertheless, even in these cases, the inhalation of 40 or 50 per cent of oxygen may be preventing functional failure of the lungs. Of the eight patients in this group, five ultimately died. The prolongation of life in the desperately ill patient may thus only infrequently end in recovery.

These figures are naturally not intended to have any bearing on the statistical evaluation of oxygen treatment. The mortality of oxygen-treated cases will depend, as it does in other types of treatment of pneumonia, on the selection of cases to a large extent. I believe that sufficient evidence has been presented for stating that in some cases the inhalation of oxygen prolongs life. In a certain number, it appears to be a life-saving measure.

EXPERIENCE AT PRESBYTERIAN HOSPITAL WITH THREE METHODS OF OXYGEN TREATMENT

1. The nasal catheter used in conjunction with a calibrated reducing gage and a high pressure tank has been found satisfactory for routine administration of oxygen. When the gage is set at 2 liters a minute, the inspired air contains approximately 30 per cent of oxygen. A large (220 cubic foot) tank lasts two days of continuous treatment. It is the most economical method of administering oxygen.

2. The oxygen tent in which the air is cooled and dried by direct passage over ice has been used for two years. It is efficient in the maintenance of from 40 to 50 per cent of oxygen, and provides a very comfortable air environment. With careful supervision, this apparatus appears to satisfy all the requirements of adequate oxygen therapy and good ventilation.

3. The oxygen chamber in which the air is cooled, dried and at the same time circulated by means of contact with an internal system of pipes containing cooled water or brine has been used for one year and found satisfactory. Recently, a hot water coil has been inserted in the chamber opposite the brine coils in order to secure a wider control of atmospheric conditions. The simplicity in running the chamber has been a prominent feature of it.

SUMMARY

Evidence is presented which indicates the importance of considering the impairment of lung function in pneumonia; namely, the interference with adequate diffusion of oxygen through the lung with consequent deprivation of oxygen in the tissues.

A group of cases is presented in which the abrupt withdrawal of oxygen therapy during the course of the disease was followed by distressing and dangerous symptoms: cyanosis, increased dyspnea and subjective discomfort, rising pulse and respiration. The existence of this type of response illustrates the need of oxygen for proper maintenance of the function of the lung in patients with marked cyanosis and dyspnea. The inhalation of from 40 to 50 per cent of oxygen in the desperately ill patient may prolong life, and in a certain number appears to be a life-saving measure. When oxygen therapy is withdrawn in these cases, it seems advisable to lower the oxygen concentration gradually (10 per cent every twenty-four hours), and observe the patient carefully for signs of oxygen want.

7. Barach, A. L.: The Effects of Atmospheres Rich in Oxygen on Normal Rabbits and Rabbits with Pulmonary Tuberculosis, Am. Rev. Tuberc. **13**: 293 (April) 1926.

8. Campbell, J. A.: Prolonged Alterations of Oxygen Pressure in the Inspired Air with Special Reference to Tissue Oxygen Tension, Tissue Carbon Dioxide Tension and Hemoglobin, J. Physiol. **62**: 211 (Jan.) 1927.

Three methods of oxygen treatment in use at the Presbyterian Hospital are:

1. The nasal catheter in conjunction with a calibrated reducing gage.
2. The oxygen tent in which the air is cooled and dried by direct passage over ice.
3. The oxygen chamber in which the ventilation is achieved by thermal circulation of the air.

110 East Eightieth Street.

AN INEFFECTUAL ATTEMPT TO CULTIVATE THE GLOVER ORGANISM FROM CARCINOMAS *

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Of the large number of organisms alleged from time to time by various investigators to be the cause of malignant new growths, that described by Glover has attracted considerable attention.

Up until a year ago, the method employed was not known; but following its publication by Glover,[1] we believed it advisable to repeat the work with scrupulous attention to every technical detail.

It is alleged that each of these individual stages can be grown in pure culture, but alteration in the composition or the reaction of the culture medium or in the environment may cause one stage to pass into another in the foregoing or reverse order. The organism grows either with or without oxygen and best at 37 C. From this description one would make the deduction that the organism is easily isolated and cultivated. Of this we were assured by one of Dr. Glover's former associates, Dr. M. J. Scott.

The bacillus is stated to liquify gelatin, coagulate milk and ferment most sugars except *granatose*.

Careful preparation for each step of the investigation was made. Accordingly, we attempted to obtain this differentiating carbohydrate, although we had never heard of it and our attempts to obtain it or information relative to it, from various sources, proved futile.

Inquiry was made of Dr. P. A. Levene of the Rockefeller Institute for Medical Research and one of the foremost authorities on carbohydrates in the United States, who stated that he was unacquainted with it. Furthermore, a prominent dealer in laboratory reagents was unsuccessful in obtaining it. This dealer also made two requests of Dr. Glover for information as to where a small quantity could be obtained, but no acknowledgments were ever received from Dr. Glover nor were the letters returned.

However, in the end we had no need of "granatose," because our cultures never yielded an organism resembling that described by Glover or any which we could not readily identify.

Summary of Cultures of Carcinomatous Tissue with Glover's Medium

Case	Age	Duration	Tissue	Results of Cultures In: Horse Serum Medium	Results of Cultures In: Rabbit Serum Medium	Pathologic Diagnosis
1. A. L.	54	18 months	Breast	No growth	No growth	Scirrhous carcinoma and metastasis
2. S. P.	59	17 months	Breast	No growth	No growth	Adenocarcinoma and metastasis
3. M. B.	42	13 months	Breast	No growth	No growth	Carcinoma simplex (ductal type)
4. J. H.	52	9 months	Rectum	Escherichia coli; staphylococci; streptococci	Escherichia coli; staphylococci; streptococci	Adenocarcinoma
5. A. F.	68	5 months	Nipple	Staphylococci	Staphylococci	Scirrhous carcinoma
6. B. W.	48	4 years	Cervix	Escherichia coli; staphylococci	Escherichia coli; staphylococci	Squamous cell carcinoma
7. L. B.	44	Over 12 months	Uterus (curettage)	Staphylococci; streptococci	Staphylococci; streptococci	Squamous cell carcinoma
8. M. R.	42	2 years	Breast	No growth	No growth	Scirrhous carcinoma
			Glands	No growth	No growth	
9. C. F.	50	5 months	Uterus (curettage)	No growth	No growth	Squamous cell carcinoma
10. E. S.	65	2 weeks	Breast	No growth	No growth	Adenocarcinoma
			Glands	No growth	No growth	
11. B. R.	58	2 months	Breast	No growth	No growth	Adenocarcinoma
			Glands	No growth	No growth	
12. L. T.	53	2 weeks	Breast	Staphylococci	Staphylococci	Scirrhous carcinoma
			Glands	No growth	No growth	
13. E. N.	53	6 months	Breast	No growth	No growth	Scirrhous carcinoma

Total cases, thirteen; total tissues, seventeen.

Our plan also included animal inoculation tests had we succeeded in securing the organism; but cultures of thirteen different tumors, listed in the accompanying table, failed to yield the organism described by him.

Glover described this organism as a gram positive, filtrable, motile organism, and stated that he isolated it and obtained cultures of it from every type of malignant tumor investigated, including human carcinoma, mouse carcinoma (63), rat carcinoma, human sarcoma, rat sarcoma (Jensen) and Rous fowl sarcoma (number 1). It is also stated that the blood of the hosts of these malignant growths would yield cultures in a large percentage of cases. He stated that the life cycle of this organism comprises three microscopically visible stages; namely, (1) the bacillus stage, (2) the spore or coccus-like stage, and (3) the spore-sac stage. Furthermore, a filtrable phase is supposed to exist.

The culture medium used was prepared according to the method described by Glover. Where it is stated in the method that "0.5 to 1 per cent of glucose" was used we added 0.5 per cent; and where it is stated that "1 cc. of fresh sterile horse or rabbit serum may be added" we prepared two series of cultures, to which we added horse and rabbit serum respectively.

Since it is stated that "the organism grows equally well with or without oxygen," we employed both anaerobic and aerobic cultures, the former being incubated in the Brown anaerobic jar.[2]

Arrangements were completed before operation to procure tumor tissue for culture, and rigid aseptic precautions were observed against contamination. Furthermore, we selected mostly closed tumors and particularly cancers of mammary glands with metastases in

* From the Research Institute for Cutaneous Medicine, Philadelphia.

1. Glover, T. J.: Canada Lancet & Practitioner **67**: 5 (Nov.) 1926.

2. Brown, J. H.: J. Exper. Med. **35**: 467 (April) 1922.

order to avoid bacterial contamination and especially with gram positive, motile, rapidly growing, spore bearing organisms of the *B. subtilis* group. Each tumor was transported to the laboratory immediately after removal and cultures were made. At the same time a small piece was removed for pathologic diagnosis.

The results are detailed in the accompanying table and show that thirteen cases consisting of seventeen tissues were studied. Where a whole breast with metastasis to the lymphatic glands was received, a culture of the latter was also taken.

It will be noted that in no instance was an organism isolated having any of the morphologic or cultural characteristics of that described by Dr. Glover. Twelve of the seventeen tissues showed no growth at all, while five showed the presence of organisms quite unlike that described by him. Furthermore, cultures of the Rous fowl sarcoma (number 1) yielded negative results, as likewise cultures of a mouse carcinoma.

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Clinical Notes, Suggestions and New Instruments

THE USE OF A URETERAL CATHETER AND BOUGIE IN STRICTURE OF THE URETHRA

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Recent experience with several cases of stricture of the urethra in which it was possible to pass only the smallest filiform reveals a meager armamentarium for handling such cases. With the exception of the LeFort filiform and steel follower together with the flexible urethral bougie and whalebone there are no instruments for handling cases in which it is impracticable to use the instruments mentioned. The presence of one or more areas of stenosis of the urethra at times precludes the use of a steel sound, so that it is very difficult to dilate the urethra from the size that admits a filiform to a 16 or 18 French caliber. I have found that a ureteral bougie at times fills a long felt need for such an instrument whereby the urethra could be dilated up to a size sufficient to admit a steel instrument without the possibility of much trauma. In obstinate cases of urethral stricture with evidence of sepsis as a result of retention in the bladder of the septic products, a large size ureteral catheter may be tied in. The filiform tip Blasucci ureteral catheter answers this purpose admirably, as the tip is flexible and readily conforms to any irregularities of the lumen of the urethra. This type of catheter may be left in place over a period of from five to ten days, provided the catheter is irrigated frequently to insure its patency.

When it is desired to dilate the stricture to an even larger caliber, one may obtain the ureteral bougies in sizes up to 18 F., which will insure a reasonable dilation with the least trauma to the infected urethra. It has been our experience that a ureteral bougie will more readily conform to a tortuous channel that may be encountered in stricture than will the stiff whalebone filiform bougie. This bougie may be obtained in the same size. The whistle tipped Garceau ureteral catheter may also be used for both irrigation and dilation when infection of the bladder is present.

The ureteral catheter has also been found of benefit in catheterizing infants when congenital difficulties in the urethra made it difficult to insert the standard infant size soft rubber catheter. After the catheter is introduced, aspiration, which facilitates emptying of the bladder, may be practiced.

Adenomatous changes in the prostate sometimes present an almost insuperable difficulty in introducing a catheter to the bladder for decompression when acute retention is present. We have found that a large size ureteral catheter is invaluable in such instances and it is possible to relieve an overdistended bladder by this method when all other nonoperative measures have failed. One may obtain ureteral catheters in sizes varying from 4 to 14 F. and ureteral bougies in all even numbers up to 18 F. The graduated ureteral catheter has 1 cm. markings on it, so that one may readily estimate the depth of any strictured area that is encountered. These may be obtained through any urologic instrument dealer.

Washington Medical Building.

Special Article

MEDICAL ECONOMICS

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It is a trite aphorism that doctors are poor business men, by which is meant that the average doctor knows nothing about the underlying principles of good business; that he is unacquainted with the laws of economics, and that as a rule he is the most gullible of all men when it comes to investing money. Unfortunately there is too much truth in the statement. Why is it that doctors use so little judgment when it comes to matters of business? It is because they practice a profession that for centuries has dwelt in the shadow of altruistic tradition; because they have been so wrapped up in the scientific aspect of their work that they have neglected to a great extent the material affairs of life; because they have had little or no training in business affairs; because by reason of listening from day to day to the ills and complaints of their patients, which they assume to be true, they have become unduly credulous; because by their efforts to inspire confidence and hope in their patients they have become optimists and have permitted their optimism to extend too much to affairs outside their profession. All of these becauses, showing, as they do, the beautiful and lovable side of the physician's nature, explain, perhaps, why he is such a poor business man, but they do not contain any cogent reason why he should remain one.

The sociological relations of the physician are daily becoming more complex. They are now very different from what they were fifty or twenty-five or even ten years ago; and unless the physician gives a little more thought and study to the economic problems of the day, he is certain to be the loser. Economics in its general sense is the science that investigates the conditions and laws affecting the production, distribution and consumption of wealth or the material means of satisfying human desires. In this sense the word has a wide application, but it is frequently qualified by limiting its meaning to some particular branch of human endeavor. In this discusson I shall limit its application to the practice of medicine. Even when the subject is thus qualified, it presents many problems of great importance to the physician.

There are four parties deeply concerned in the subject of medical economics: the physician, the patient, the profession as a whole, and the public. There is no vocation in which the question of economics enters so largely as it does in the practice of medicine, nor one in which so many persons are involved. When one enters on the practice of medicine, one assumes certain duties and obligations to the public, to the profession and to the patient as well as to himself. The obligations to the public and to the profession are in a sense moral obligations; those to the patient are of a contractural or legal nature as well as a moral one, while those to the

physician himself, except under certain conditions, are subordinate to the other two.

It is a natural and laudable ambition of every physician to succeed in his profession and to secure as large a practice by honest and legitimate means as he can.

The average physician, strangely enough, gives little thought to the question of economics and to the psychologic effect on the people of the things which he does. Take, for instance, his relations with the numerous so-called diagnostic laboratories that are springing up all over the country, many of which are owned and conducted by laymen. These laboratories exist only by reason of the support given them by the physician, but the physician seldom realizes what he is doing when he refers his patients to them. He doesn't seem to appreciate the fact that he is not only curtailing his own business but also that of the profession at large.

COMMERCIAL LABORATORIES

When a person is sick, he naturally turns to the doctor as his first resort, not only to tell him what the trouble is but also to advise him how to get well. When a patient goes to a doctor, who finds on making his examination that a urinalysis, or a blood count, or some other of a dozen simple tests should be made, which the doctor is incompetent or too lazy to make, and so sends him to one of these commercial laboratories to have the test made and a report thereon sent back to him, who can blame the patient for saying to himself, "If a doctor has to send me to a laboratory to have my urine examined, why can't I take it there myself and get a report and thus save the doctor's fee?" Many of these laboratories encourage just this sort of thing. Some of them have elaborate printed forms which give the normal composition of the urine or blood or what not, and any slight deviation from this is checked on the report so that the patient's attention is drawn to it, whether of any significance or not. Incidentally, he may be advised what to do to correct this apparent abnormality.

Some of these laboratories organize clubs, agreeing to examine the urine of the members at regular intervals for so much a year, and to advise them what to do in case any abnormality is found. Do you realize how many patients are lost to the profession in this way, and, worst of all, how much bad advice these patients are receiving from such institutions, and do you realize that it is all your own fault? Some of these institutions advertise that they are equipped to give hypodermic medications, intravenous injections, arsphenamine treatments, mercury rubs, colonic flushings, etc., and have the audacity to ask physicians to send their patients to them for such treatment, offering *sub rosa*, of course, to divide the fee with the physician referring the case.

Every physician ought to know how to make the simple clinical tests and should be equipped to make them. Any physician who is not competent to make them should not practice in that class of cases. Any physician who is too lazy to make them should have respect enough for his confrères to refer such cases to them instead of to a commercial laboratory, and any physician who is too busy to make them is busy enough to have an assistant to do the detail work for him. The same applies to the giving of the simple treatments just mentioned. The loss of a patient or of a fee is not the only evil connected with this method of practice. The psychologic effect on the patient is bad. It begets the feeling of distrust of a doctor's ability and creates a tendency to seek unqualified advice.

THE CARE OF MINOR AILMENTS

Another great source of loss to the profession is the failure of most physicians to give proper attention and care to those suffering from so-called minor ailments. Those of the profession who have worked up a good practice and who have acquired a reputation do not seem to want the minor cases. They want only the big things, the interesting cases, while those who ought to take care of them do not think them of sufficient importance to learn how to treat them properly. The result is that these patients flock to the cults and quacks. They make up the bulk of the practice of the irregulars, who, convincing the patient that he had some serious and remarkable condition which the physician had given up, performs a "marvelous" cure and thereby receives undeserved credit. The medical profession should waken from its lethargy and see that these patients receive proper care and attention. At the last several examinations for licensure in the state of Illinois the number of chiropractors, osteopaths, etc., exceeded that of the regular profession. It is not unreasonable to suppose that there must be some demand on the part of the public for the services of cultists, otherwise there would not be such a large number desiring to enter their ranks. May not the reason be that they give to the people a personal attention and consideration that is being neglected by the regular profession? This is a matter of considerable importance, not only to the physician but to the patient as well. The medical profession should see that these patients receive proper care and treatment and are not manhandled under the mistaken idea that some portion of their anatomy needs adjusting.

MANAGEMENT OF HOSPITALS

Another matter of importance is the management of hospitals. The physician should devote time and study to the business end of hospital management, as well as to the professional end. It will not do for a physician to say that he doesn't care anything about the management of the hospital so long as he has a good place to take his patients. Do you ever stop to think that the chances of having a good hospital where you are at liberty to take your patients and treat them according to your own ideas are constantly growing less? And that hospital management is being dominated more and more by laymen who fail to understand and appreciate the professional side of the situation? Lay boards of trustees of hospitals are beginning to think that every patient who enters a hospital belongs to the hospital and that it is the duty of the board to determine who shall take care of him. The attitude of the lay superintendent of a hospital is well shown in a recent article that appeared in the daily press of one of our large cities, in which he said, "Physicians are necessary adjuncts to a hospital, but they should have nothing to say in regard to who their confrères should be." Now an adjunct is "that which is joined to something, but is not an essential part of it." Is it not interesting to know that doctors are not an essential part of a hospital and that they haven't sense enough to determine whom they shall work with, or to have anything to say about the hospital management? I am not at all in accord with this idea. I believe that medical men should predominate in the management of every hospital, and furthermore I believe that there are doctors who have business sense enough to undertake the work. The hospital is the physician's workshop, and when a workman ceases to have something to say about the management of his shop he has

lost his independence and soon finds himself working under some one else, in the doctor's case, under the dictation of laymen.

It should be the duty of all physicians who are actively concerned with hospital work to see that the primary purpose of the hospital—namely, the care of the sick—is not diverted or minimized by the prevailing passion for so-called standardization, which seems to have obsessed so many organizations and institutions today. Hospitals are being flooded with elaborate questionnaires, some of them asking questions which no self-respecting institution would answer, such as the names and salaries paid its superintendent and other employees, and the names and particular religion of the members of the staff, and are being overrun by young inspectors who have no knowledge of, or experience in, the management of hospitals, each with an arbitrary yardstick with which to measure and rate the hospital according to the dominant idea of the institution doing the rating. One will rate the hospital on the basis of its physical equipment; another on its scientific paraphernalia; a third on the percentage of autopsies held on the dead; a fourth on the number of beds and its facilities for training interns; a fifth on the willingness of the members of the staff and all others practicing in the hospital to sign an iron-clad stultifying oath concerning fees, which it is acknowledged cannot be enforced and which, as is well known, is constantly being violated by a large percentage of its own members, and so on down the list, while no one seems to have grasped the idea of rating hospitals according to the amount of good they are doing in the relief of human suffering, having in mind the economic conditions of the community served.

Physicians must have strength of character enough to assert themselves in the management of hospitals. They must be imbued with the high ethical principles of the profession and see that all those who work with them are likewise ethical. This is a duty they owe to themselves, their profession, their patients and the public.

Another source of economic loss to the profession is the selling of the physician's knowledge and skill to lay corporations organized for profit who resell the knowledge thus gained back to the patient at a much higher price. Many physicians throughout the country by reason of their undue credulity and under the guise of altruism have been imposed on in this way and are now selling their services to a jobber to be resold. This is not only a direct financial loss to those engaged in the work, but a breach of the obligation which every physician owes to the profession as a whole, as it lessens the confidence which the people have in its ability, lowers its dignity, and detracts from its independence. The agitation which was raised against this practice a short time ago has already borne fruit, as one of the large insurance companies that formerly contracted with a corporation to do this work has now given it up and refers its policyholders to their family physician, where they belong, to make the periodic health examinations.

CONTRACT PRACTICE

Somewhat allied to this is the question of contract practice. In discussing this subject it is necessary that we have a clear understanding of what constitutes contract practice. By contract practice, as applied to medicine, is meant "the contract or agreement between a physician or group of physicians and an individual, firm, organization or association to render full or part medical service to a group or class of individuals for a fixed amount or a definite rate per capita." There are a few physicians who seem to think that any form of contract practice is ethical. On the other hand, there are those who think that all forms of such practice are unethical. As a matter of fact, both of these views are wrong. Those who hold that any form of contract practice is ethical regard the subject from a purely personal and selfish point of view. They believe that it is their right and privilege to secure practice in any manner that is legitimate or legal. They fail to see that their social status differs from that of one engaged in any other occupation, and that they have a duty or obligation not only to themselves but to the patient, the public, and to the profession as a whole. Anything which disregards the obligation to any of these interested parties cannot be held to be fair or ethical. On the other hand, those who regard every form of contract practice as unethical fail to take into consideration the rights which certain individuals may have to secure competent medical service.

Contract practice per se is not unethical. It becomes a question of ethics only when the terms of the contract and the conditions and circumstances under which it is made are considered. There are some circumstances that make it impossible to secure competent, medical services except by contract, as, for instance, when large numbers of workmen are engaged in logging or mining at places remote from urban centers, where it would be impossible to get a competent physician to go except under contract. There are some communities so small in population as to be undesirable locations for a physician, yet whose people wish to have competent help in time of need and are willing to subsidize or guarantee by contract such a physician a certain sum in addition to that which the practice of the community would provide, and such a contract, if properly drawn, may be perfectly legitimate and ethical. There are many other conditions under which contract practice is proper and ethical. In fact, there are so many that it is difficult to lay down definite rules as to what constitutes an ethical contract. It is much easier to determine what is unethical than what is ethical, but before deciding any particular case all of the facts relating thereto must be known. It may be said, however, that a contract is unfair and therefore unethical when the compensation received is inadequate based on the usual fees paid for the same kind of service and class of people in the same community, or when the compensation is so low as to make it impossible for competent services to be rendered. In the first instance, price cutting under contract makes it unfair competition and leads to economic loss to the individual physician as well as to the entire profession, and in the second instance, in addition thereto, the patient suffers from inadequate service. Underbidding by the physicians in order to secure a contract is not only derogatory to the dignity of the profession and therefore demoralizing, but must lead to incompetent and inadequate care of the sick. A contract that denies a reasonable free choice of physicians in a community where other competent physicians are readily available is unfair in that it annuls the patient's right to have the physician in whom he has confidence; and the confidence of the patient is one of the greatest assets of the physician. Again, the solicitation of patients, directly or indirectly, as is done by some physicians and by a number of so-called hospital or health associations, is so unethical in every feature that it seems almost unnecessary even to mention it.

In fact, every form of unethical contract practice is a distinct violation of the obligation which every physician has to uphold the honesty and dignity of the profession.

FEES

I have said that the physician's obligation to his patient is of a moral, as well as of a contractural nature, and under this moral obligation comes the question of fees. I do not now refer to the hackneyed question of the dishonest division of fees against which the conscience of every one revolts, but to the size of the fee. Honesty and fair dealing require that the fee should be governed by the economic status of the patient and his ability to pay, of course due consideration being given to the character of the services rendered. To charge a fee, regardless of what the services may have been, which the economic status of the patient makes it impossible for him to pay is little short of a crime. I am not in sympathy with the physicians or surgeons who feel that their great reputation and standing compel them to charge fees which are exorbitant when based on the financial status of the patient, nor have I any respect for the occasional one who feels that his eminence, usually self-assumed, or his cupidity has given him the right deliberately to hold up his patients. Do not infer from this that I am opposed to large fees in proper cases. On the contrary, I believe that those who are abundantly able should pay well for good service. A few concrete examples that have come to my attention recently will illustrate my meaning.

A young working girl earning about thirty dollars a week, on which she was obliged to maintain herself and her mother, was taken ill with what the physician who was called in pronounced appendicitis, and she was informed that it was necessary to operate on her at once. We will grant the correctness of the diagnosis, but not that the case was an emergency demanding immediate operation. She was rushed to the hospital and a surgeon called who did a simple, clean appendectomy and the patient made a speedy recovery. The girl had borrowed the money from friends to pay her hospital bill, which was demanded in advance. The surgeon, knowing her circumstances, presented her a bill for $1,500 for his operation. She explained how impossible it was for her to pay any such amount, when she was told that she would not be permitted to leave the hospital until she produced the money. Not knowing what to do, she sent for an attorney friend, who had to go out to the hospital and get her.

The next case was one in which the chief surgeon of one of our hospitals did an exploratory laparotomy on a man with an inoperable carcinoma of the stomach. At the conclusion of the operation the surgeon immediately went to the wife of the patient, who was waiting in his room, and asked for his fee, which he said was $5,000. She said she was unable to pay such a fee and besides that she had no money with her, and that her husband always paid the bills. The surgeon said that it was customary for him to have his fee when the operation was finished and that she would have to make some arrangements to pay it at once. All this was done before he informed the wife that her husband was already dead, he having died on the operating table as a result of simply opening and closing the abdomen. When the real facts were known, the widow turned the bill over to her attorney. The attorney wrote to the surgeon asking if there was not some mistake in the bill, saying that the entire estate of the deceased, including the life insurance, household furniture and everything, amounted to less than $20,000. The surgeon had the audacity to reply that he was sorry that there had been a mistake, but he had forgotten to add $62 for the dressings and sent an amended bill for $5,062. The attorney, who was a high class professional man himself, came to me and asked my advice as to what he should do. It is needless for me to say what I said to him.

The third case is that of a physician who injected a fake and fraudulent so-called serum into a woman who was said to be suffering from a cancer of the stomach. The woman's husband was earning only $147 a month. The doctor charged $300 for this simple injection and, it is alleged, under promise that it would cure his wife, the husband paid his month's check of $147, plus $3 that he borrowed from a neighbor, and gave his note for $150, payable in thirty days, which the doctor at once placed at the bank for collection. He was told not to expect any improvement in his wife for some six weeks or more. As his wife continued to grow worse he refused to pay the note when it became due, but reported the case to the state board. You will say that this was the work and tactics of a quack, but it wasn't. The doctor was a well educated physician on the teaching staff of one of our class A universities.

Do not think that I imply that such cases are common. On the contrary, I believe that the great majority of physicians are fair and reasonable in their charges. These cases are mentioned for the purpose of emphasizing the point which I wish to make—that the economic status of the patient must be considered in making the fee. And be not unmindful of the fact that one such extortionate fee is remembered long after a hundred charities are forgotten; and, furthermore, that the entire profession suffers for the wrongful act of one of its members.

BASIS OF THE PHYSICIAN'S OBLIGATION

Why is it that the duties and obligations of the physician are so much greater in a community than those imposed on any other vocation? It is for the simple reason that his profession is a monopoly—not such a monopoly as is enjoyed by some public service corporation, for instance, but a monopoly by reason of the inherent nature of his work. There is no one else competent to care for the sick but the properly trained physician. There is no one else who can assume his place in the community. As sickness, suffering and accidents in life are unavoidable, the physician becomes a necessity in the sociological scheme. The very fact that the conditions which the physician is called on to relieve come to the individual unbidden and render him helpless and dependent brings to the fore with strong emphasis the humanitarian aspect of the practice of medicine, an aspect which should never be forgotten and one which imposes on the physician certain moral obligations which cannot be repudiated. If we recognize that the practice of medicine is a monopoly we must admit that this monopoly entails on the profession a definite and distinct duty which cannot be delegated, and this duty is the care of the sick and suffering. It doesn't mean the care of some of the sick, or even of all of the sick some of the time, but it means the care of all of the sick all of the time. If the medical profession as a body fails to grasp and to fulfil its entire duty in this respect, then will private and public institutions and legislatures step in and take the matter out of the hands of the profession. The

health of the individuals of a community or of a nation is recognized by all as the most important element in the welfare and prosperity of that community or nation. It is because the medical profession has failed to make proper provision for the care of all of the sick, all of the time, that we hear so much agitation about federal and state measures that inevitably tend to state medicine and the loss of the independence of the physician. That this is no idle dream is well shown by a recent editorial in the Chicago *Tribune*, in which it advocated the corporation practice of medicine as offering the best way in which the public could be served. It was also perhaps because of the recognition of this failure that a group of public spirited men in Chicago a short time ago organized the Public Health Institute, which today is treating on an average 1,800 patients daily at a cost which they are able to pay and at great profit to the institution. The old free dispensaries connected with medical colleges and fostered entirely for teaching purposes do not meet the situation. I have long thought that such institutes conducted in a strictly ethical manner would be one of the greatest assets that the profession could have. I believe further that every community should have one or more similar institutions, as its needs may require, enlarged to include all departments of medicine, and conducted entirely by the profession where every patient unable to pay reasonable fees to his physician could receive the best of medical services at a cost within his means. When this is brought about the medical profession will then be fulfilling its entire duty to the public and to itself, and on a sound business and economic basis.

25 East Washington Street.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

W. A. PUCKNER, SECRETARY.

EPHEDRINE.—Ephedrina.—Ephedrine base.—α-hydroxy-β-methyl-amino-propylbenzene ($C_6H_5.CHOH.CH[NHCH_3].CH_3$). An alkaloid derived from *Ephedra equisetina*.

Actions and Uses.—The same as those of the ephedrine salts. The free alkaloid is employed in mediums, such as oils, in which it is more soluble than the salts.

Dosage.—One per cent, in oil, may be used for local application to mucous membranes.

Ephedrine occurs as an unctuous, almost colorless solid that tends to crystallize as needles. The needles melt at 34-40 C., and the liquefied alkaloid boils above 200 C. The specific rotation in absolute alcohol (Note: must be no moisture by anhydrous copper sulphate test) $[\alpha]\frac{D}{20}$ falls between —6 and —7.5. It is soluble in alcohol, chloroform, ether and water, the solutions being strongly alkaline to litmus paper moistened with water. Dissolve 0.0005 Gm. of ephedrine in 1 cc. of water and add 0.1 cc. of copper sulphate solution (10 per cent) followed by 1 cc. of sodium hydroxide solution (20 per cent): a reddish purple color develops. To this solution add 1 cc. of ether, shake the mixture and compare with a tube made up similarly, but without using ether: the reddish purple is partially extracted (apparently decolorized by the ether). Dissolve 0.05 Gm. of ephedrine in 10 cc. of choroform and allow to stand twelve hours, evaporate spontaneously: white crystals of ephedrine hydrochloride appear; wash with a little chloroform, dry: the crystals melt between 214 and 220 C.

Dissolve 0.05 Gm. of ephedrine in 30 to 40 cc. of distilled water, add 1 cc. of diluted nitric acid and 1 cc. of silver nitrate solution: less turbidity results than in a control tube using 0.1 cc. of fiftieth-normal hydrochloric acid (*limit of chloride*). Dissolve 0.05 Gm. of ephedrine in from 30 to 40 cc. of distilled water, add 1 cc. of diluted hydrochloric acid and 1 cc. of barium chloride solution: no turbidity develops in ten minutes (*limit of sulphate*).

Dissolve about 0.2 Gm. of ephedrine, accurately weighed, in 10 cc. of ether in a previously tared beaker, add an excess of hydrogen chloride in ether, evaporate to dryness, dry to constant weight over calcium chloride, and weigh; dissolve the residue in distilled water and dilute with distilled water to 10 cc.; observe the angular rotation at 20 C.: the specific rotation in water $[\alpha]\frac{D}{20}$ falls between —33 and —35.5.

Dissolve about 0.2 Gm., accurately weighed, in 10 cc. of neutralized alcohol, add 5 drops of bromcresol green solution and an excess of tenth-normal hydrochloric acid, titrate the excess, using fiftieth-normal sodium hydroxide solution: the acid used in neutralizing the ephedrine is equivalent to not less than 97 per cent, nor more than 100 per cent of the ephedrine used.

Place about 0.3 Gm. of ephedrine accurately weighed in a previously tared wide-mouthed weighing bottle in a desiccator and allow to stand over calcium chloride at room temperature for eighteen hours (the temperature should not go above 22 C.): it loses not more than 1.8 per cent of its weight.

Heat about 0.1 Gm. of ephedrine accurately weighed in a platinum dish until constant weight is obtained. The ash is less than 0.1 per cent.

Ephedrine-Lilly.—A brand of ephedrine-N. N. R.

Manufactured by Eli Lilly & Company, Indianapolis. No U. S. patent or trademark.

Inhalant Ephedrine Compound-Lilly: A solution containing ephedrine-Lilly, 1 per cent (by weight) in a liquid composed of menthol, 0.66 Gm.; camphor, 0.66 Gm.; oil of thyme, 0.31 cc.; liquid petrolatum to make 100 cc. U. S. patent applied for. No U. S. trademark.

POLLEN EXTRACTS-CUTTER (See New and Nonofficial Remedies, 1927, p. 34; THE JOURNAL, June 11, 1927, p. 1891).

Also marketed in single vial packages containing 5 cc. of a 1:100 solution.

POLLEN EXTRACTS CONCENTRATED-CUTTER.—Liquids obtained by extracting the dried pollen of plants with a liquid consisting of 67 per cent of glycerin and 33 per cent of a buffered saline solution.

Actions and Uses.—See Allergic Protein Preparations, New and Nonofficial Remedies, 1927, p. 23.

Dosage.—See Allergic Protein Preparations, New and Nonofficial Remedies, 1927, p. 23.

Pollen extracts concentrated-Cutter are marketed in single vial packages containing 5 cc.

Manufactured by the Cutter Laboratory, Berkeley, Calif. No U. S. patent or trademark.

Alkali Weed Pollen Extract Concentrated-Cutter; Allscale Pollen Extract Concentrated-Cutter; Annual Saltbush Pollen Extract Concentrated-Cutter; Arizona Ash Pollen Extract Concentrated-Cutter; Bermuda Grass Pollen Extract Concentrated-Cutter; Black Walnut Pollen Extract Concentrated-Cutter; Box Elder Pollen Extract Concentrated-Cutter; Burning Bush Pollen Extract Concentrated-Cutter; Canary Grass Pollen Extract Concentrated-Cutter; Careless Weed Pollen Extract Concentrated-Cutter; Coast Sagebrush Pollen Extract Concentrated-Cutter; Cocklebur Pollen Extract Concentrated-Cutter; Common Ragweed Pollen Extract Concentrated-Cutter; Corn Pollen Extract Concentrated-Cutter; Cottonwood Pollen Extract Concentrated-Cutter; False Ragweed Pollen Extract Concentrated-Cutter; Foxtail Grass Pollen Extract Concentrated-Cutter; Giant Ragweed Pollen Extract Concentrated-Cutter; Johnson Grass Pollen Extract Concentrated-Cutter; June Grass Pollen Extract Concentrated-Cutter; Lamb's Quarters Pollen Extract Concentrated-Cutter; Marsh Elder Pollen Extract Concentrated-Cutter; Mountain Cedar Pollen Extract Concentrated-Cutter; Mugwort Pollen Extract Concentrated-Cutter; Oak Pollen Extract Concentrated-Cutter; Olive Pollen Extract Concentrated-Cutter; Orchard Grass Pollen Extract Concentrated-Cutter; Plantain Pollen Extract Concentrated-Cutter; Red Root Pigweed Pollen Extract Concentrated-Cutter; Red Top Pollen Extract Concentrated-Cutter; Russian Thistle Pollen Extract Concentrated-Cutter; Rye Grass Pollen Extract Concentrated-Cutter; Sagebrush Pollen Extract Concentrated-Cutter; Shad Scale Pollen Extract Concentrated-Cutter; Timothy Pollen Extract Concentrated-Cutter; Tumbleweed Pollen Extract Concentrated-Cutter; Velvet Grass Pollen Extract Concentrated-Cutter; Western Ragweed Pollen Extract Concentrated-Cutter; Western Waterhemp Pollen Extract Concentrated-Cutter; Wild Oat Pollen Extract Concentrated-Cutter; Yellow Dock Pollen Extract Concentrated-Cutter.

Pollen extracts concentrated-Cutter are prepared by extracting the dried pollen with a menstruum composed of 67 per cent of glycerin and 33 per cent of an aqueous solution containing potassium dihydrogen phosphate (KH_2PO_4), 0.0908 per cent; sodium phosphate ($Na_2HPO_4.12\ H_2O$), 0.238 per cent, and sodium chloride, 0.85 per cent. The extract is clarified by Berkefeld filtration. The finished liquid is a 3 per cent extract of the dried pollen, each cubic centimeter representing 0.03 Gm. of dried pollen.

The Essence of Social Hygiene.—In social hygiene the individual is not to be considered as an individual merely, but as one of the group who make up the home and whose happiness and usefulness, determined by success or lack of success of the home, react on the community. The essence of social hygiene is that it is social. It works for the physical, mental and moral health of the individual in his personal relations with other individuals and the community, and the successful teacher must possess a knowledge of all the factors which influence these relations.—Wood, The Teacher's Part in Social Hygiene, p. 3.

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SATURDAY, NOVEMBER 26, 1927

NATURAL MINERAL WATERS AND MODERN RESEARCH

Mineral springs and their waters in many parts of the world had a therapeutic vogue long before the chemist discovered the nature of the constituents or the physical properties responsible for the alleged remedial effects. The analyses that have gradually become available indicate that, with respect to chemical composition, the waters from different localities and even from different natural sources in the same environment exhibit almost as much variation as do the maladies for the relief of which mineral water therapy has been called into service. Thus, spring waters have been characteristically classed as hot, carbonated, alkaline, acid and cathartic or specially designated with respect to the presence of iron, sulphur, arsenic or lithium. The early chemical interpretations of some of the waters most popular for either internal or balneologic use failed to disclose any readily defensible reasons for the widely heralded virtues of the springs involved; yet the vogue of the spas has by no means vanished because the scientists have not rallied to their aid or exploitation. Indeed, there are signs at present of an actual augmentation of the popularity of some of the well known spas both in this country and abroad.

From time to time, when the claims of a remedial product cannot be substantiated by careful scientific investigation, the lauded novelty is discredited, loses vogue and soon falls into disuse. This has been the fate of many items promoted by the medical impostor. "Electric belts," magical "vibrators," "sure cures" for baffling diseases, and similar types of quackery devised almost over night by the schemes of the unscrupulous have been exposed to the searchlights of scientific scrutiny and promptly driven out of the fields where they have ventured to thrive. In contrast with such situations in connection with medical problems is the persistence of certain therapeutic measures that are sanctioned by long empiric experience yet often lack any rigorous scientific justification.

Fortunately there continues in medical practice a sort of rational empiricism that gains in strength despite failures to establish it on a truly scientific basis. Now and then scientific research overtakes such empiric progress with a lucid explanation that was long lacking. This happened in the case of cod liver oil, for example. To the chemist this product remained little more than an unpalatable fat, while it was given a prominent place in the armamentarium of the physician; finally the physiologist demonstrated the biochemical properties now designated as vitamins A and D. In the case of mineral springs empirically employed with apparently good results, the improvement of analytic technic brought about a clearer understanding of what might be involved. As a recent writer remarked, new aspects manifested themselves when the chemist began to analyze the springs and to establish the nature and quantity of the salts contained in them. At first, naturally, chemical analysis was not well developed, and it was difficult, therefore, to demonstrate with certainty the presence of minute traces of elements. In this connection he notes that salt springs in Austria, which were traditionally known as "goiter-waters," appeared to contain only common salt until modern analytic chemistry showed that they also contained the therapeutically active iodine. Many cases are known in which man's instinct first found the remedy, while science, with its exact explanations, lagged behind. The classic example of this in balneology, he adds, is the early recognition of curative springs which seemed to contain ordinary drinking water but which later, after the discovery of radium, proved to be radioactive. Although it has not yet been shown that any of our mineral springs possess sufficient radioactivity to have appreciable curative effects for this reason, mineral spring resorts, in their advertising, continue to urge the importance of this factor.

The newer chemistry deals not only with individual ions, and the "balance" of these in solutions so as to avert physiologically baneful antagonisms, but also with the possible significance of larger complexes. This branch of study is still in its infancy. Baudisch and Davidson,[1] discussing the problems of molecular "architecture," have remarked that in most mineral waters there is calcium carbonate, besides small amounts of calcium phosphate, silicic acid and boric acid. Mineral water, which contains so complex a mixture of salts, cannot be considered simply as a mosaic of the individual constituents, but the idea must be kept in mind that even liquids have a definite structure, in a certain sense; that is to say, affinities come into play between the substances in a solution and the water molecules whereby inorganic molecules of definite structure are created. Water plants or sea animals are adapted to the structure of the liquid surrounding them in an exceedingly sensitive manner. In biologic

1. Baudisch, Oskar; and Davidson, David: Natural Mineral Waters in the Light of Modern Research, Arch. Int. Med. **40**: 496 (Oct.) 1927.

fluids, moreover, the correlation between the dissolved substances is of greatest significance. They stand to one another in demonstrable physicochemical relationships, from which it results that the resorption of a substance from a solution is different, depending on whether it is present alone in solution or in company with others. Foods, too, act reciprocally; that is to say, each contributes to the assimilation of the other. Therefore, Baudisch and Davidson add, substances present only in small amounts become of the greatest importance because of these affinities; that is, by means of the formation of more or less stable complexes.

Such considerations remain at present well within the domain of pure speculation. They have been prompted in the case of these chemists at the Rockefeller Institute for Medical Research by their concrete demonstration that various valued mineral waters exhibit a catalytic activity due to iron contained in special molecular arrangement. The Saratoga Springs investigated by Baudisch and Davidson displayed a much higher catalytic activity than any of the European springs previously investigated. The catalytic activity of the Saratoga waters depends primarily on their ferrous iron content, which is most probably in complex form. It is independent of dissolved or bicarbonate carbon dioxide. The mineral waters lose their catalytic activity in the presence of oxygen. The principal biochemical feature of the potent iron present in readily demonstrated complex ions recalls the fact that iron is indispensable to cellular respiration. It is by no means inconceivable that "catalytically active" iron may have therapeutic uses even though they still are undefinable. In this connection it should be noted that this potency is lost in the "aging" of some mineral waters. Welo and Baudisch [2] have indeed shown that one and the same ferric oxide (Fe_2O_3) in forms of different structures appears to act like two separate and distinct chemical individuals.

Perhaps these interesting chemical observations represent new possibilities of interpreting mineral water effects analogous to what radioactivity has represented. We need not be deterred from at least discussing them despite the fact that they lend themselves readily to pseudoscientific exploitation. Nor can the circumstance be overlooked that sojourn at the spas of today involves a radically altered regimen for the patient. Physical therapy is applied in many ways; nutrition is often profoundly altered; rest and change of environment afford still further changes. As Osborne has remarked, psychotherapy is closely associated with every kind of therapy; and there is always a profound mental effect from the treatment at medicinal springs. Perhaps the "oligodynamic" effect of heretofore unappreciated molecular complexes in their waters also has a place in the combination of influences that often produce benefit.

2. Welo, L. A., and Baudisch, Oskar: Science **52**: 311, 1925.

ARTIFICIAL COLORATION OF CITRUS FRUITS

Innovations in the food industries are always likely to evoke skepticism, if they do not actually call forth direct criticism. This is particularly true when the chemist ventures to modify familiar foods or to create novel ones. Such reactions of doubt and hesitation are to be expected, and, in general, they have a wholesome motivation. The public has learned to fear harm in foods and to become suspicious of fraud and deception. Not all innovations, however, are potential menaces to health; the acceptance of the new takes place more readily than was the case only a few years ago. When glucose, manufactured by acid hydrolysis of starch, became commercially available long ago, years of debate and uncertainty elapsed before the "artificial" sugar was recognized as a wholesome foodstuff. Hydrogenated fats, likewise a chemist's contribution to the human dietary, were received with far less resistance into the category of acceptable nutrients. In the interval between the first production of the "artificial" sugar and the artificial fat, governmental supervision of foods had become far more stringent; also the attitude of promoters has greatly improved in the direction of more ethical standards in business. At the present time, the use of ethylene or related unsaturated hydrocarbons in the treatment of fruits and vegetables has come to the fore. There seem to be two groups of workers: The government experts in collaboration with citrus fruit growers' organizations, which initiated the use of ethylene for the artificial *coloring* of oranges, lemons, etc., in place of the heat treatment; Harvey and his co-workers at the University of Minnesota, who have maintained that certain fruits (other than the citrus) and vegetables such as celery and tomatoes, when subjected to a sufficient concentration of ethylene can be *ripened* as well as colored.

The romance of discovering these unique actions of ethylene on plants was discussed in these columns a few weeks ago.[1] As is well known, in the case of citrus fruits, occasionally green-appearing fruits may be fairly ripe when judged according to arbitrary chemical standards. The artificial coloring of such fruits, as well as markedly immature fruits, by the use of dyes naturally suggested itself many years ago, but on the whole, the U. S. government prosecutions under the Food and Drugs Act were effective. This method of deception was therefore frowned on by various law-enforcing agencies, as well as by the trade. It seems paradoxical, however, to note that the artificial coloring of citrus fruits by ethylene has been undertaken with government cooperation. Thus, of late, the employment of this method has grown tremendously.

The position of the government is perhaps inconsistent. Why, for instance, should an almost infinitesimal amount of a harmless dye not be permitted if the use

1. Artificial Ripening of Fruits and Vegetables, editorial, J. A. M. A. **89**: 792 (Sept. 3) 1927.

of ethylene as a means of producing color is sanctioned officially? If the use of a dye to mask the true color of oranges and grapefruit is not in the interest of the public, why permit ethylene? That the ethylene treatment of citrus fruits is essentially a coloration and not a ripening process appears to be shown by the recent investigations of Chace and Church,[2] working in the Laboratory of Fruit and Vegetable Chemistry of the United States Bureau of Chemistry and Soils. Using their methods of assay, they report that no change in the composition of the edible portion was detected. They take care to point out that these results are not necessarily conclusive. This commendable caution is appreciated when it is understood that the respiratory rate is increased when a room full of oranges is submitted to a dilute atmosphere of the gas ethylene. Under such circumstances a decided rise in the temperature of the room will be noted within twenty-four hours. To physicians, especially, an increase in the metabolism signifies dissipation of energy; therefore it is difficult to explain the fact that no change was observed in the composition of the edible portion, while at the same time there is a reaction which produces heat. Thus, the mechanism of this interesting reaction promises to be a rich field for investigators. In the case of infant feeding, the vitamin content, particularly of oranges, is of importance to the prescribing physician. While the artificially colored citrus fruits, when picked under careful supervision as to relative maturity, are probably wholesome for general consumption, it is well to bear in mind that the investigation of the relative vitamin content of ethylene-treated oranges has not received attention. Whether or not this is of any practical moment as far as dietetic prescribing is concerned awaits the time until more is known of the profound influence of ethylene on plant physiology.

STIMULI TO CELL MULTIPLICATION

The mechanism underlying the multiplication of cells has naturally held a dominant place in the mind and work of the biologist since the beginning of the microscopic era. Coupled with it has always been the more intricate problem of cell differentiation in the community cell life of an animal or plant body. If the mechanisms concerned in these two processes can be isolated and placed at the disposal of the biologist, many of the difficulties encountered today with the acute infections, the anemias and the tumors of the body may be overcome.

Practically all diseases caused by living parasites are associated with altered characteristics or diminished or increased rate of multiplication of some of the specific component cells of the body. For example, the organisms of many of the acute infections possess a stimulus to the multiplication of the polymorphonuclear granular leukocytes. Perhaps the stimulus is a common factor to all the organisms that function in this way. Many of the animal parasites possess a stimulus to the multiplication of eosinophils. The tubercle bacillus contains a stimulus to the multiplication of the nongranular monocyte or epithelioid cell and the organism of kala-azar[1] for the clasmatocyte. Whatever underlies the leukemias would seem to be coupled with stimuli for multiplication of various specific types of leukocytes, and more striking and baffling than all is the local multiplication of cells of various types in one or many localities in the wide family of new growths. There would seem to be stimuli of definite capacity to urge cell multiplication of one or another type wherever tumor cells grow.

The morphologist with his stains and histologic technic has traced the cell structure back through the nucleus, the nucleolus and the chromozomes almost to the electrons and the electronic currents which pass from within outward and from the environment to the center of cell structure. Recently the chemist has come more definitely into the picture. Whipple,[2] for example, has shown that the liver contains a stimulus to blood cell regeneration in animals rendered anemic by bleeding. Minot[3] and his associates, using this lead of Whipple's, have found a stable substance in liver extract which can be isolated, which has the power of stimulating the multiplication of all the cells manufactured by the bone marrow, and which is of especial value in pernicious anemia.

Anderson,[4] and Sabin and Doan[5] have found two substances isolated from the tubercle bacillus, one a protein stimulating the multiplication of the clasmatocyte and the other a phosphatide which causes overgrowth of the monocyte or epithelioid branch of the mesoblast cells.

For many years the intimate relation between the tubercle bacillus and the epithelioid cell has been known. Recently it was brilliantly pictured by Maximow,[6] but to isolate, from the bacilli, in a form pure enough to be used by the biologist, the substances underlying the physical, chemical and multiplying phenomena of cells found in the disease is a step of the farthest reaching importance. It is comparable to the isolation of glutathione as a mechanism of oxidation and reduction by Hopkins,[7] of insulin by Banting, and of many other specific substances.

2. Chace, E. M., and Church, C. G.: Effect of Ethylene on Composition and Color of Fruits, Indust. & Engin. Chem. **19**: 1135 (Oct.) 1927.

1. Meleney, H. E.: The Histopathology of Kala-Azar Within Hamster, Monkey and Man, Am. J. Path. **1**: 147 (March) 1925.

2. Whipple, G. H., and Robscheit-Robbins, F. S.: Blood Regeneration in Anemia, Am. J. Physiol. **72**: 408 (May) 1925.

3. Minot, G. R., and Murphy, W. P.: A Diet Rich in Liver in the Treatment of Pernicious Anemia, J. A. M. A. **89**: 759 (Sept. 3) 1927.

4. Anderson, R. J.: The Separation of Lipoid Fractions from Tubercle Bacilli, J. Biol. Chem. **74**: 525 (Sept.) 1927; A Study of the Phosphatide Fraction of Tubercle Bacilli, ibid. **74**: 537 (Sept.) 1927.

5. Sabin and Doan: The Biological Reactions in Rabbits to the Protein and Phosphatide Fraction from the Chemical Analysis of Human Tubercle Bacilli, J. Exper. Med. **76**: 645 (Oct.) 1927; The Relation of Monocytes and Clasmatocytes to Early Infection in Rabbits with Bovine Tubercle Bacilli, ibid. **76**: 627 (Oct.) 1927.

6. Maximow, A.: Tuberculosis of Mammalian Tissue in Vitro, J. Infect. Dis. **34**: 549 (June) 1924.

7. Hopkins, F. G.: Some Oxidation Mechanisms of the Cell, Bull. Johns Hopkins Hosp. **32**: 321 (Oct.) 1921.

Through the perfection of tissue culture methods such as Carrel's, of microchemical methods for cell manipulation such as Chambers [8] has developed, of exact methods of studying cell respiration in minute quantities such as Warburg [9] has devised, and the production of pure chemical substances from the living organism by the chemist, medical science appears to be on the threshold of a vast increase of new knowledge in biology and disease. Cooperation in studying these life processes is an important factor for the speed of future progress.

Current Comment

A PHYSICIANS' LEAGUE OR A DOCTORS' UNION

Chicago physicians were the recipients last week of a communication urging them to affiliate themselves with an organization to be called "The Chicago Physicians and Surgeons Economic League." Two of the officers of this association are physicians. Its business manager is one I. Braverman, who, according to the Chicago *Tribune,* has been at various times associated with the organization of window washers, fixture hangers, and similar erudite professions, and who not infrequently seems to have indulged in the system of medical practice credited to that famous westerner "Billy the Kid." The latter, it seems, also dispensed medicines chiefly in the form of homeopathic pills of lead projected with somewhat extreme velocity into the person of his prospective client. According to the information available, the purposes of Braverman's proposed organization are to correct the abuse of medical charity, to eliminate difficulties of collection, and to interfere with the progress of state medicine. Physicians who join are, it seems, to contribute the sum of $5 as an initiation fee and $2 a month subsequently. As THE JOURNAL has pointed out again and again, innumerable organizations are constantly being formed in the field of medicine. A considerable proportion of these are planned primarily for the benefit of the organizer. The American Medical Association, the state medical associations and the county medical societies have been developed on democratic principles by physicians for physicians and for the good of the public. In New York City there have been organizations of physicians for economic purposes. These groups have failed signally to accomplish the purpose sought, for the simple reason that any medical organization formed primarily to collect money and in disregard of the high ideals that have constantly animated medical science is bound to fail. Such movements are incompatible with professional practice. Possibly there are doctors in Chicago who are willing to adopt the methods that have been used to swing into line the janitors, window washers, scavengers and junkmen. The present effort cannot possibly appeal to a physician who is a physician in every sense of the word. It would seem rather to be a part of the system that has made the name of Chicago a laughing stock if not anathema to much of the civilized world. Poor Chicago!

8. Chambers, Robert: A Simple Apparatus for Micromanipulation Under the Highest Magnification of the Microscope, Science **54**: 411, 1921.
9. Warburg, Otto: Ueber die Wirkung des Kohlenoxyds auf den Stoffwechsel der Hefe, Biochem. Ztschr. **177**: 471, 1926.

Association News

THE MINNEAPOLIS SESSION

Papers for Section on Orthopedic Surgery

Any Fellow of the American Medical Association who wishes to present a paper before the Section on Orthopedic Surgery at the annual meeting to be held in Minneapolis, June 11 to 15, 1928, is requested to communicate with the secretary of the section. All requests for a place on the program must be accompanied by an abstract of the paper.

HENRY W. MEYERDING,
Mayo Clinic, Rochester, Minn.
Secretary, Section on Orthopedic Surgery.

ANNUAL CONGRESS ON MEDICAL EDUCATION, LICENSURE AND HOSPITALS

Preliminary Program of Meetings to Be Held in Chicago, Feb. 6-8, 1928

The next conference of the Council on Medical Education and Hospitals will be held in the Palmer House, Chicago, February 6-7. The preliminary program follows:

MONDAY MORNING, FEBRUARY 6

OPENING OF THE CONFERENCE BY THE CHAIRMAN. Arthur Dean Bevan, M.D., professor of surgery, Rush Medical College, Chicago.

MEDICAL EDUCATION IN GREAT BRITAIN. Sir Norman Walker, M.D., member, General Medical Council of Great Britain.

PRESENT-DAY MEDICAL EDUCATION. William H. Welch, M.D., professor of history of medicine, Johns Hopkins University School of Medicine, Baltimore.

MONDAY AFTERNOON, FEBRUARY 6

SYMPOSIUM: MEDICAL RESEARCH IN THE GOVERNMENTAL MEDICAL DEPARTMENTS

(*a*) *In the Army Medical School.* Lieut. Col. Joseph F. Siler, Surgeon General's Office, Washington, D. C.

(*b*) *In the Navy Medical School.* Admiral E. R. Stitt, Surgeon General, United States Navy.

(*c*) *In the Hygienic Laboratory.* Surg. Gen. Hugh S. Cumming, United States Public Health Service.

THE REVISION OF THE STANDARD NOMENCLATURE OF DISEASES AND PATHOLOGICAL CONDITIONS, INJURIES AND POISONINGS. William H. Davis, M.D., chief statistician for vital statistics, Department of Commerce, Washington, D. C.

TUESDAY MORNING, FEBRUARY 7

MODERN PRECEPTORSHIPS: THE VALUE OF ASSOCIATE TEACHING CENTERS IN CLINICAL TEACHING. Charles R. Bardeen, M.D., dean, University of Wisconsin Medical School, Madison.

DE-DEPARTMENTALIZING OF CLINICAL TEACHING. J. S. Evans, M.D., professor of medicine, University of Wisconsin Medical School, Madison.

THE USE OF THE OUTPATIENT DEPARTMENT IN UNDERGRADUATE MEDICAL INSTRUCTION. Irving S. Cutter, M.D., dean, Northwestern University Medical School, Chicago.

INVESTIGATIVE WORK AND LIBRARY SERVICE IN A NONTEACHING HOSPITAL. John E. Ransom, superintendent, Toledo Hospital, Toledo, Ohio.

TUESDAY AFTERNOON, FEBRUARY 7

SYMPOSIUM: AUTOPSIES IN MEDICAL SCHOOLS AND HOSPITALS

(*a*) *The Educational Value of Autopsies.* Harvey H. Bemis, M.D., professor of physical diagnosis, Detroit College of Medicine and Surgery.

(*b*) *The Relationship Between the Medical Staff and the Hospital Administration in the Use of Autopsies.* Christopher G. Parnall, M.D., medical director, Rochester General Hospital, Rochester, N. Y.

(*c*) *The Obtaining of Autopsies.* Elexius T. Bell, M.D., professor of pathology, University of Minnesota Medical School, Minneapolis.

(*d*) *Minimum Procedure Justly Referred to as an Autopsy.* Frederick C. Smith, M.D., Marion, Ohio.

Wednesday, February 8, the Federation of State Medical Boards will hold its annual meeting, the preliminary program of which is as follows:

WEDNESDAY MORNING, FEBRUARY 8

REVISION OF MEDICAL SCHOOL REGULATIONS AS RELATED TO LICENSURE. Fred C. Zapffe, M.D., secretary, Association of American Medical Colleges, Chicago.

OPERATION OF MEDICAL LICENSURE AND REGISTRATION IN GREAT BRITAIN. Sir Norman Walker, M.D., member, General Medical Council of Great Britain.

PRACTICAL EXAMINATIONS FOR STATE MEDICAL BOARDS. Horace D. Arnold, M.D., member, Massachusetts Board of Registration in Medicine, Boston.

IMPORTANCE OF UNIFORM BLANKS. R. C. Compton, chairman, Committee on Uniform Blanks, American Association of Collegiate Registrars, Wooster, Ohio.

WEDNESDAY AFTERNOON, FEBRUARY 8

SYMPOSIUM: BASIC SCIENCE LAWS

(*a*) Charles B. Kelley, M.D., secretary, New Jersey Board of Medical Examiners, Trenton.
(*b*) Royal C. Rodecker, M.D., president, Wisconsin Board of Medical Examiners, Holcombe.
(*c*) A. E. Comstock, secretary, Minnesota Board of Medical Examiners, St. Paul.

SYMPOSIUM: ANNUAL REGISTRATION AS AN ENFORCEMENT PROCEDURE

(*a*) Harold Rypins, M.D., secretary, Board of Medical Examiners of the State of New York, Albany.
(*b*) Guy L. Connor, M.D., secretary, Michigan Board of Registration in Medicine, Detroit.
(*c*) A. T. McCormack, M.D., secretary, Kentucky State Board of Health, Louisville.

SYMPOSIUM: BUDGET PROBLEM OF MEDICAL EXAMINING AND LICENSING BOARDS

(*a*) Roy B. Harrison, M.D., secretary, Louisiana Board of Medical Examiners, New Orleans.
(*b*) Charles B. Pinkham, M.D., secretary, California Board of Medical Examiners, Sacramento.
(*c*) T. J. Crowe, M.D., secretary, Texas Board of Medical Examiners, Dallas.

This meeting will be preceded on Tuesday evening by the annual dinner of the federation.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Health Institute for School Teachers.—The department of health and corrective physical education of the Los Angeles city schools will give a special health institute for teachers, December 19-24, at which time thousands of educators will assemble in Los Angeles. Lectures will be given from nine until five every day in the American Legion Hall, 1816 South Figueroa Street. Members of the California Medical Association are invited. Prominent physicians of California will be on the program. This is considered a special opportunity for the medical profession to teach preventive medicine and public health.

Mr. J. P. McGuire Sells Diathermy Equipment.—A manufacturing company in Los Angeles writes that arrangements were made recently for Mr. J. P. McGuire to sell their diathermy equipment and that he was given a portable machine to show. Instead, however, Mr. McGuire is reported to have sold the machine to a physician in Los Angeles and then to have left the city. Mr. McGuire took great care in this transaction, it is said, to have the check made out in his name; after some months of cooperation with another company who held the paper on an automobile that Mr. J. P. McGuire had stolen, he was located in Portland, Ore., where, it appears, he was out of reach of the California law as far as a charge of embezzlement was concerned. Our correspondent considers Mr. J. P. McGuire well posted on electrotherapy apparatus, and believes that he probably will try to continue his tactics among physicians.

Society News.—Dr. Burns S. Chaffee, Long Beach, addressed the Los Angeles County Medical Association, November 17, on "Intestinal Obstruction"; Dr. Madison J. Keeney, Los Angeles, on "Spontaneous Pneumothorax in the Apparently Healthy Individual," and Dr. Cleon C. Mason, Long Beach, on "Medical Pirates."——The International Medical Club of Southern California will meet, November 30, at B'Nai Brith Hall, on which occasion the program will be presented by the Jewish confrères. All members of the Los Angeles Medical Association are invited. The object of this club is to create an opportunity for social contact and a better understanding between physicians of different nationalities. It proposes to encourage the study of medical progress, both ancient and modern, and the study of those men who have been contributing to scientific medical progress. The aim is to become familiar with the outstanding medical personalities in the scientific world. Scientific talks will not be undertaken, as these are taken care of by the county medical and auxiliary societies.

DISTRICT OF COLUMBIA

Personal.—Dr. Paul J. M. Lowell has been appointed to the position of medical officer of the drug control laboratory of the food, drug and insecticide administration to succeed George S. Jamieson, Ph.D., resigned.——Dr. Herman E. Kittredge has been appointed consulting dermatologist to St. Elizabeth's Hospital.

Legislation to End "Mail-Box Universities."—Proposed legislation to end diploma mills in the District of Columbia has been agreed on by the chamber of commerce and the board of trade for the district. The legal requirements at present for establishing colleges and universities in the district are such that the diploma mill operator can easily function. Any five persons need only to file with the recorder of deeds a certified paper stating their intention to establish an institution. The statement is then placed on record, and the institution has full power to grant medical or other degrees, and to sell them without requiring any qualifications, except mere formalities. Most of these institutions never are heard of by the general public. The "universities" may consist only of postoffice boxes where money orders may be received in exchange for a degree. The legislation now proposed provides for amendments to the corporation code of the district which will require that any institution incorporated shall first secure a license from the board of education before granting any academic degrees, and this license shall be granted only on a thorough examination of the qualifications of the applicants. This requirement shall apply to all institutions granting academic degrees excepting those already in existence which operate by special act of Congress and include George Washington, Georgetown, Catholic, American, Howard and National universities. These colleges are exempted from the provisions of the proposed law. Among other provisions, the proposed legislation would include a fee of $25 for filing incorporation papers, instead of $1, the present price; a requirement that the persons making the application are qualified to conduct an institution for learning; that the degree shall be granted only after a required residence period; that a reasonably large faculty with classrooms, laboratories and library shall be provided; that the public school personnel of the district may be used to investigate the qualifications of applicants; that district officials would have power to revoke any license granted to a university; that the words "United States, National, Federal or Civil Service" should not be allowed in the name of any university, and that the advertising of degrees as being "under the authority of Congress of the United States," or the use of similar words indicating that the institution had an official standing, should be prohibited.

FLORIDA

Society News.—Ninety-seven physicians attended the meeting of the Florida East Coast Medical Association at West Palm Beach, November 10. The speakers at the dinner included Dr. John A. Simmons, Miami, president of the state medical association; Dr. William E. Van Landingham, vice president of the state association, and Dr. Robert C. Woodard, Miami, president of the Dade County Medical Society. At the scientific meeting, seventeen papers were presented. Dr. John E. Hall, West Palm Beach, was elected president for the ensuing year, and Dr. Roy J. Holmes, Miami, secretary. The next meeting will be at Miami.

Faiman's Florida License Revoked.—The state board of medical examiners is reported to have revoked the license to practice of Charles C. Faiman, November 15. Faiman obtained his "license to practice" in Florida from Dr. George A. Munch of Tampa, formerly secretary of the Eclectic Board of Examiners, who was recently convicted in federal court

on a charge of using the mails to defraud in connection with the sale of medical diplomas and licenses, and was sentenced to Atlanta penitentiary for five years. The records in these headquarters fail to show that Faiman ever attended or was graduated from any reputable medical school in this country.

Tampa Opens Municipal Hospital.—The commissioners of the city of Tampa invited the public to inspect the Tampa Municipal Hospital and to attend its dedication, November 6. The principal address was given by Dr. Stewart R. Roberts, Atlanta, Ga. Among other speakers were the superintendent of the hospital, Dr. Bert W. Caldwell, the mayor of the city, Perry G. Wall, and the chairman of the board, Thomas F. Alexander. The hospital was opened for patients, November 7. It is located on the northern tip of Davis Island near the business center and is surrounded on three sides by water. The cost of the building and fixtures has been about $1,675,000. The hospital has a capacity for 250 patients and is planned so that with minor changes the capacity can be expanded to 500. An effort has been made to afford the utmost privacy consistent with the economical care of

patients. The first floor is devoted entirely to administration and other work than the housing of patients. There is a special section for sun treatment in the children's department. On each floor there are two open-air sun parlors. The rooms will cost from $3 to $6 a day. The fifth floor will be the nurses' home.

GEORGIA

Society News.—Dr. Jefferson L. Richardson read a paper on "New Clinical Aspects of Alcoholism" before the Fulton County Medical Society, Atlanta, November 17; Dr. Avary M. Dimmock read a paper on "Study in Tuberculosis."——Dr. George Bachman will read a paper before the Emory Medical History Club at the Wesley Memorial Hospital, Monday, November 28, on "Claude Bernard" and Dr. Frank K. Boland on "Lister."——Dr. James R. Garner, Atlanta, was elected president of the Association of Railroad Chief Surgeons at the annual meeting in Chicago, November 2.

ILLINOIS

Consulting Staffs for State Hospitals.—Seventy-five persons representing practically every organization in the community attended a dinner at the Lincoln State School and Colony, Lincoln, November 14, at which the president of the Logan County Medical Society, Dr. Anthony M. Drummy, Lincoln, was toastmaster, and the principal speaker, Dr. Alexander S. Hershfield, state alienist. Dr. Hershfield presented a program entailing the organization of a consulting staff of local physicians in each community where a state hospital is located, and the establishment of various clinics in the hospitals for the better study and care of patients. He pointed out that Illinois gives its patients the best custodial care of all the states; that the development of psychiatry is well operated and the mental side of institutional care properly emphasized, but that there still needs to be more general medical assistance, more attention paid to the physical condition of patients, and more study that may well furnish some explanation of mental difficulties. To accomplish this, greater cooperation with general practitioners and all types of specialists outside the institution is desirable. The plan for a better cooperative effort was endorsed at the dinner. Other speakers included the managing officer of the Lincoln State School, Dr. Christian H. Diehl, Effingham, Judge Lindley, Judge Stringer, Rev. W. C. Lloyd, representatives of the Woman's Club, the press, Rotary, Kiwanis, the Parent-Teacher Association, the Association of Commerce and other organizations.

Chicago

Abortionist Hagenow Convicted Again.—A jury in Judge Feinberg's court, November 20, found Mrs. Lucy Hagenow guilty of having performed an illegal operation on a girl who died later. Mrs. Hagenow was sentenced to fourteen years in prison on a charge of manslaughter; she has served two terms in prison for similar offenses, having been convicted in 1898 and again in 1908, and has been acquitted of similar charges in other trials. She is now 82 years of age.

Survey of Health of Negroes.—At the request of the health commissioner of Chicago, the finance committee of the city council voted funds for a survey of health conditions among the negroes. The work, which began May 2 and was completed July 29, was conducted under the direction of Dr. Harrison L. Harris, Jr., and an advisory committee of eighteen under the chairmanship of Isidore S. Falk, Ph.D. A fact brought out in the report, the health commissioner states, is that the negro death rate in Chicago is twice that of the city as a whole; it is said to be 22.8 per thousand for the negroes, while the negro infant mortality is 94.7 per thousand live births. These rates are figured on the basis of a negro population of 160,000 for 1926 and a total population for Chicago of 3,048,000. The largest loss of life among negroes is from tuberculosis, pneumonia and diseases in infancy. The comparative rates for tuberculosis among the white and black races were 58.5 and 348.5, respectively; pneumonia, 88.8 and 114.7, respectively, and diseases of infancy, 64.6 and 94.7, respectively. The report of the survey states that communities in which the negroes reside in largest numbers are poor in health agencies, while some institutions in these communities do not extend their services to negroes. Furthermore, there is a wide variation in efficiency in the contagious disease control work in the public schools and a closer supervision seems necessary. Further standardization of results of examinations of the school children is urged in the report as well as a more extensive correction of defects, more positive health teaching and the extension of facilities to care for the school child. It is also said that a careful examination should be made of the basis on which the services are being rendered to the negro by the hospitals of Chicago.

INDIANA

Outbreaks of Smallpox.—An outbreak of sixteen cases of smallpox was reported from the vicinity of Merrillville, November 15, and another outbreak of thirteen cases at South Bend, November 11. Hundreds of persons were being vaccinated to prevent further spread of the disease in the above and other nearby communities.

MARYLAND

Personal.—Dr. George H. Preston, Richmond, Va., has been appointed executive secretary of the Mental Hygiene Society of Maryland and will begin work, January 1; Dr. Ross M. Chapman, Towson, has been elected president of the Mental Hygiene Society of Maryland, succeeding Dr. Adolf Meyer, who was made honorary president.——Drs. Samuel S. Glick and William A. Sinton were appointed health officers in the Baltimore City Health Department, recently. ——Dr. Martin F. Sloan was reelected president of the Maryland Tuberculosis Association at the recent annual meeting; Dr. Charles Hampson Jones, vice president, and Dr. Samuel Wolman, secretary.

Society News.—The Baltimore City Medical Society held a joint meeting, November 16, with the Medical Society of the District of Columbia in Washington; a bus was chartered to convey the members from Baltimore. Dr. Dean Lewis gave an address on "Operability of Carcinoma of the Stomach," and Dr. Andrew C. Gillis, professor of neurology, University of Maryland School of Medicine, on "Chronic Epidemic Encephalitis."——At the November 16 meeting of the Baltimore County Medical Society, Baltimore, Dr. Charles Bagley, Jr., spoke on "Brain Tumors and Their Diagnosis for the General Practitioner," and Dr. Charles Loring Joslin, on "Otitis Media and Its Complications in Children."

Plans to Acquaint Baltimore with Johns Hopkins Hospital.—At the annual dinner of the Johns Hopkins Hospital Association, November 18, plans were discussed whereby the work of the Johns Hopkins Hospital can be made better known among the people of Baltimore, so that their support may be gained in maintaining the institution. The hospital must receive better support in the city of Baltimore to continue its charitable work and the plan of selling memberships in the Johns Hopkins Hospital Association was approved. It was stated at this meeting, which was presided over by Dr.

Lewellys F. Barker, president of the association, that 47 per cent of the 11,580 patients admitted to the hospital this year were treated entirely free.

MASSACHUSETTS

Society News.—Dr. Louis Wolfe addressed the October meeting of the North Shore Medical Fraternity, Lynn, on "Heart Pain," and Dr. Louis J. Ullian the November meeting on "Hypothyroidism," following which, Dr. Saul M. Marcus, Peabody, was elected president and Dr. Ellis Michelson, Lynn, secretary of the fraternity.——Dr. Eliot H. Luther addressed the New England Pediatric Society at the Boston Medical Library, November 11, on "Diagnosis and Treatment of Poliomyelitis."

Appointments to Medical Faculty of Boston University.—The following physicians have been appointed assistants on the faculty of Boston University School of Medicine in the departments indicated: Martin F. Crotty, obstetrics; Sidney C. Dalrymple, Brookline, pathology; Frank L. Jones, Somerville, laryngology; William L. Krieger, Boston, medicine; George Levene, Boston, radiology; Charles H. Merrill, Beverly, otology; Charles E. Montague, Wakefield, medicine; Leroy E. Parkins, Boston, diseases of the chest; Harold W. Ripley, Braintree, otology, and Ernest Springer, Boston, surgery.

Dr. Warren's Will.—The will of the late Dr. John Collins Warren was filed in the Suffolk registry of probate, November 8. Among the bequests is that of the sword and prayer book of Gen. Joseph Warren of the Revolutionary War and an original manuscript oration by General Warren. Each of Dr. Warren's two sons is bequeathed outright $100,000; they will benefit by sharing the principal of the trust fund created by Dr. Warren's father and will receive the residue of the property which is left in trust for them. Dr. Warren bequeathed $5,000 to the president and fellows of Harvard University to establish a free bed in the Collis P. Huntington Memorial Hospital in memory of his father; $1,000 is given to the Massachusetts Historical Society, and $500 each to the four grandchildren.

Infantile Paralysis at Haverhill.—At a meeting of the Massachusetts Association of Boards of Health, Boston, recently, the outbreak of infantile paralysis at Haverhill during the last summer was the subject of a paper by George T. Lennon of the board of health. The epidemic, which was then on the wane, was said to have had the highest maximum incidence of any epidemic, with a rate of 2.2 per thousand of population. There had been a total of 106 cases and fifteen deaths up to October 31. In the seventeen years since 1909, Haverhill had had up until 1927 a total of 172 cases of infantile paralysis, with twenty-nine deaths. The previous largest number of cases in any other year was in 1917 when thirty-nine cases with two deaths occurred. In the 1927 epidemic, Haverhill had more than 10 per cent of the cases that had been reported in the state, and that is a considerably greater percentage of the total than was reported for the city of Boston. In 1926, Haverhill had only twelve cases and three deaths, and there was one year (1919) in the past seventeen in which no cases occurred. In one family, four children had the disease and in three families, two children had the disease. The peak of the epidemic occurred at about the eleventh week. The opening of the public schools was postponed for two weeks, and this was followed by an exodus of families from the community to neighboring towns and the seashore. The average age of the children affected was 5 years and 8 months. Two adults were affected, a man, aged 31, and a woman, aged 40. The situation was considered so serious by traveling salesmen that they refused to visit Haverhill, and persons in other places feared meeting people from Haverhill.

MINNESOTA

Hospital News.—Ceremonies were conducted, October 13, at the laying of the cornerstone of the Children's Hospital in St. Paul. Addresses were given by Dr. Isaac Abt, professor of pediatrics, Northwestern University Medical School, Chicago, and Mr. George F. Lindsay, chairman, board of trustees. The hospital is expected to be completed next spring (THE JOURNAL, September 3, p. 797).——The Sisters of St. Benedict are erecting a hospital of about 300 beds at St. Cloud, which will replace the St. Raphael's Hospital and will be completed about January 1.

New Fellows at Mayo Foundation.—The following physicians have recently been assigned as fellows in the Mayo Foundation majoring in medicine: Ivar W. Birkeland, Oslo, Norway; Laurin Dudley Bumpus, Providence, R. I.; Hugh T. Carmichael, Peterboro, Ontario; John H. Childrey, Richmond, Va.; Thomas A. Clawson, Jr., Salt Lake City; John U. Fauster, Jr., Defiance, Ohio; John Lansbury, Wellington, Ontario; Ellis Dice Lineberry, Woodlawn, Va.; Harold C. Ochsner, St. Paul; Henry A. Peacock, Hamilton, Ontario; Theodore J. Pfeffer, Corwith, Iowa; Edward H. Rynearson, Pittsburgh; John R. Spannuth, Myerstown, Pa., and Melvin W. Binger. The following physicians are majoring in surgery: Meredith G. Beaver, Portland, Ore.; Reuben J. Boesel, Worland, Wyo.; Julian M. Bruner, Des Moines, Iowa; Howard I. Down, Odebolt, Iowa; Frank Emmons, Vancouver, B. C.; Frederic C. Hill, Cando, N. D.; Harold B. Loughery, Muskegon, Mich.; William P. L. McBride, New Castle, Pa.; Ray B. McCarty, Riverside, Calif.; Thomas B. Moore, Somers, Mont.; Silvanus Archibald Morton, Halifax, N. S.; Stanford W. Mulholland, Millville, N. J.; George T. Murphy, Chicago; Wallace L. Nelson, Racine, Wis.; Joseph B. Priestley, Des Moines, Iowa; John A. Steward, Chattanooga, Tenn.; Adrian Verbrugghen, Guyra, Australia; Stephan A. Yesko, Washington, D. C.; Dr. Walter D. Abbott, Des Moines, Iowa, neurologic surgery; Dr. Rudolph J. Mroz, Chicago, orthopedic surgery; Dr. Frederick W. Schacht, Racine, Wis., urology; Dr. Mark E. Nesbit, Waterloo, Iowa, ophthalmology; Dr. Algernon S. Hurt, Jr., Richmond, Va., pediatrics; Dr. John A. Hookey, Detroit, dermatology and syphilology; Dr. Ethel Barrow Cheshire, England, pathology; Dr. George L. Kilgore, Anderson, S. C., pathology; Dr. George F. C. Fasting, Chicago, bacteriology.

Home for Social Agencies Dedicated.—The Citizens' Aid Building in Minneapolis, which was formally dedicated, October 19, is said to have the most complete housing facilities for social agencies in the United States. It was erected by the Citizens' Aid Society as a memorial to George Henry Christian, founder of the society. The twenty-one social agencies which occupy the building do not pay any rental to the Citizens' Aid Society. The object of a central building is to correlate the work of the agencies and to prevent duplication of effort, and in this connection there are such joint services as multigraphing, mimeographing and central bookkeeping. The architecture is Georgian. The offices are on the second and third floors, and each one has ample storage room in the basement for exhibit material. There is a cafeteria, seating 125 persons, on the ground floor and three small dining rooms; an auditorium, seating 400 people, and a basement garage for forty cars. The memorial feature of the building is the library, with a capacity of more than 2,500 books on sociology and philanthropy, which is operated by the Minneapolis Public Library. Among the agencies located here is the Hennepin County Tuberculosis Association which has a general office, a large staff room, a store room and offices for the placement supervisors. The Citizens' Aid Society has been closely identified with the work of the tuberculosis association for years; it erected also the Children's Building at Glen Lake, in 1922.

NEW HAMPSHIRE

Personal.—Dr. Leon M. Orton, Ashland, has been appointed medical referee of Grafton to succeed the late Dr. John Wheeler; Dr. Walter F. Noyes, Colebrook, has been appointed referee of Coos County.——The Coos County Medical Society held its annual meeting at Gorham, October 21. Following a luncheon at the Androscoggin Country Club, Dr. Emery M. Fitch, Claremont, president of the state medical society, and Dr. Bertram L. Bryant, Bangor, secretary of the Maine Medical Society, gave addresses. The program was a discussion of organized medical defense and group liability insurance.

First Rural Health Center.—Deering Center, a hamlet in the foothills of the White Mountains, miles from a railroad station, is headquarters for the township of Deering in which less than 300 people live. The first rural health center in New Hampshire was opened in Deering Center, in October. Various clubs and individuals cooperated for the good of this community and its neighbors in this undertaking. The idea of establishing a permanent health center grew out of a series of child health conferences instituted by the state department of health. It was taken up by the Deering Community Club,

which appropriated funds to alter and equip the present quarters. At the dedication, October 2, addresses were made by Dr. Eleanor A. Campbell of the state health department, and by representatives of the American Child Health Association and others. Classes will be organized in first-aid work at the request of the men of the district; a series of classes in health for the mothers and girls will be conducted, and the Red Cross will institute classes in practical home hygiene. It is expected that arrangements will soon be made for the periodic physical examination of adults.

NEW YORK

Personal.—Dr. Ralph D. Reid, Schenectady, was recently appointed health officer of the town of Niskayuna.——Dr. William H. Marcy, Buffalo, assumed the duties of president of the Association of New York Central Lines Surgeons at the fifth annual meeting, October 14.

Society News.—Dr. Thomas M. Rivers of the Rockefeller Institute for Medical Research delivered the annual Gross lecture before the Pathological Society of Philadelphia, November 10, on "General Aspects of Pathologic Conditions Caused by Filtrable Viruses."——Dr. James M. Dobbins has been elected president of the Long Island City Medical Society.

Memorial Laboratory Dedicated.—The George Skiff Memorial Laboratory at Warsaw was dedicated, October 6, in memory of the late Dr. George Skiff, who owned and directed the first laboratory in Wyoming County. Dr. Skiff's ability, industry, sincerity and devotion to ideals were such that an outstanding expression of the community's grief was sought. A building was therefore erected to house his laboratory as an appropriate memorial. The dedicatory address was delivered by the president-elect of the Medical Society of the State of New York, Dr. Harry R. Trick, Buffalo.

Three Cases of Cowpox.—A dairyman, his wife and a hired hand in the southern part of the state recently contracted natural cowpox from the herd owned by the dairyman. These cases were seen by the associate director of the division of communicable diseases of the state department of health, Dr. Herman F. Senftner, and by the attending physician, who at first suspected anthrax. There were from one to eight ulcers on the palms and a smaller number on the backs of the hands, about one-half inch in diameter and irregular, some appearing to be the result of the coalescence of several ulcers. The disease was severe, with fever, pain in the hands, and loss of weight, in one case, 15 pounds. Not any of the three persons having the disease had ever been vaccinated.

Graduate Course in Sullivan County.—The Medical Society of the County of Sullivan, in affiliation with the committee on public health and medical education of the Medical Society of the State of New York, is giving a series of six weekly graduate lectures, beginning November 16, 8:30 p. m. The first lecture was held at the hospital in Monticello; the others are to be at the Maimonides Hospital at Liberty. Clinical material is utilized as far as possible from the practices of physicians in attendance and from the hospitals. Dr. Harris A. Houghton, New York, who is giving the lecture, November 30, will discuss, among other things, hyperglycemia and concealed diabetes as a complication of high blood pressure; the low salt diet in high blood pressure, and edema. The December 7 lecture will comprise general principles of diet and calculations of diet according to Woodyatt's formulas. Further information about the course can be had from Dr. Thomas P. Farmer, 608 East Genesee Street, Syracuse, N. Y., chairman of the committee on public hygiene and medical education of the state society.

New York City

Chiropractor Sentenced.—Gottlieb J. Rencher, a chiropractor of Brooklyn, was convicted, November 18, at the Kings County Court of Special Sessions, of practicing medicine without a license, and was sentenced to thirty days in the workhouse. The complaint against Rencher was made by an inspector of the state board of medical examiners.

Demonstration of Medical Equipment.—Major John P. Fletcher, assisted by enlisted men and a civilian of the medical department, was ordered from the medical field service school at Carlisle, Pa., to New York to give a demonstration, October 22, on the grounds of the Metropolitan Hospital, Welfare Island, of army medical department equipment. Major Fletcher described the steps that have been taken to revise the equipment since the World War. It is understood that similar demonstrations will be held in other parts of the country.

Summer Work with Children.—A meeting for clinic workers was held, November 10, under the auspices of the New York Tuberculosis and Health Association, the Associated Out-Patient Clinics Committee and the North Atlantic District of the American Association of Social Workers. The subject discussed was "Summer Work with Children." The first aim of the health camp, according to Dr. Harry E. Kleinschmidt of the National Tuberculosis Association, is to help children below par in health and yet not sick enough to be in bed. A health camp is, in fact, a preventorium. About 80,000 children in New York City are sent away every summer for vacations. Dr. Mary Alice Asserson, secretary, Children's Service, New York Tuberculosis and Health Association, said that they go to 162 camps in nearby states and some are sent to private homes.

OREGON

Personal.—Dr. Harold L. Averill has been appointed deputy health officer of the city of Portland.——Dr. Albert Okerstrom, Detroit, Mich., has been appointed superintendent of the Columbia Hospital, Astoria, it is reported.

Illegal Practitioners Prosecuted.—A jury in the district court at Portland, about November 1, found Mrs. R. E. Lang, a chiropractor, guilty of practicing medicine without a license and she was sentenced to ten days in jail and fined $150. Mrs. Lang's defense was that she had administered minerals and herbs which she contended were not medicine, which she was charged with having prescribed for Mrs. Valentine Slowskowski, who died.——George W. Pardy, who is said to have offices in the Sweatland Building, Portland, was arrested, about November 1, charged with having practiced medicine without a license, and was released on $500 cash bail. These cases were brought to court through the efforts of the board of medical examiners of the state of Oregon.——It is reported that Dr. Albert C. Burroughs, Portland, was recently found guilty by a jury of practicing medicine without a license and was ordered by the judge to the county jail for sixty days and fined $250. This case was brought to trial by the board of medical examiners of the state of Oregon. Dr. Burroughs, it appears from records in the files at these headquarters, is a nongraduate who has been in practice for many years. He claimed to have been licensed in Colorado and Texas.

PENNSYLVANIA

Society News.—The Clearfield County Medical Society held a symposium on indigestion, November 9, in which the speakers were Drs. Harold A. Blair, Lever F. Stewart, George D. Fussell and Andrew L. Benson.——Reuben L. Kahn, Sc.D., of the Michigan State Department of Health, will give an address at the Hotel Schenley, Wednesday evening, November 30, on "The Kahn Reaction in Clinical Medicine" to which physicians are cordially invited. Dr. Kahn will be the guest of the staff of the Pittsburgh Diagnostic Clinic.

Personal.—Dr. Samuel S. Hill has resigned as superintendent of the state hospital for the chronic insane at Wernersville.——Dr. Harry W. Mitchell was reelected superintendent of the state hospital, Warren, at the annual meeting of the trustees.——George A. Lundberg, Ph.D., formerly of the University of Washington, Seattle, has been appointed to the department of sociology, University of Pittsburgh.——Dr. Charles Hamlin Pelton, formerly superintendent of St. Luke's Hospital, Chicago, has been appointed superintendent of Montefiore Hospital, Pittsburgh.——Dr. Ross A. Kelly has resigned as president of the board of health of Sharon.

SOUTH CAROLINA

Bond Issue for Tuberculosis Sanatorium.—At the election, November 8, the voters of Greenville County approved a bond issue of $150,000 for the building of the new Hopewell Tuberculosis Sanatorium, which will be essentially a Greenville County institution of seventy-five beds offering free treatment for indigent patients and treatment for pay patients at a normal fee.

Cow for Loan to Needy Families.—Sometime ago, when an entire family in the vicinity of Greenville was suffering from pellagra and was destitute, a cow was purchased by popular subscription and turned over to the local chapter of the Red Cross to be lent to this family. Since these patients have recovered from pellagra, the cow has been lent from time to time to other needy families and will in the future be so lent throughout the county. This arrangement is said to be an asset in the work of the Red Cross, which is the only organized relief agency in Greenville County.

TEXAS

Eight Days in Jail—Four Charges.—Judge Wilson assessed a fine of $200 and eight days in jail against "Dr." J. Charles, a negro faith healer, following his plea of guilty, recently, to four charges of violating the medical practice act. According to the *Texas State Journal of Medicine*, a committee of twenty-five white women pleaded with the court not to give the jail sentence, and pointed out how much good the negro doctor had done them. The judge was forced to give a jail sentence in view of the law as the accused pleaded guilty.

Hospital News.—The new Knox County Hospital, costing $60,000 and having a capacity of thirty-five beds, has been opened. It is a fireproof structure; Dr. Thomas S. Edwards is the chief surgeon.——Dr. Sigmund Frankel, professor of experimental medicine, Imperial Royal University of Vienna, Austria, will be the guest of the staff of the Kings Daughters Hospital, Temple, December 20, at which time he will lecture on "Physiology and Chemistry of Hormones" and "Theory of Synthetic Artificial Drugs."

Society News.—Drs. Kenneth H. Aynesworth and James W. Hale, Waco, read a paper on "Ptosis" before the Bexar County Medical Society, October 6, illustrated with lantern slides.——Dr. Peyton R. Denman, Houston, read a paper before the Harris County Medical Society, October 5, on "Observations on Blood Pressure, Pulse and Respiration in Various Forms of Regional Anesthesia."——A symposium on the chemical reactions of the blood was conducted by the Tarrant County Medical Society, October 4, the speakers being Drs. Joseph F. McVeigh, Ernest H. Bursey, Robert S. Mallard and Douglas R. Venable, all of Fort Worth.

WASHINGTON

Gift for College Hospital.—A gift of $40,000 from the John A. Finch estate will make possible the erection of a thirty-five bed hospital on the campus of Washington State College at Pullman which, it is expected, will be completed by September, 1928, and will cost, in all, about $85,000.

Society News.—Dr. Richard Hayes, Longview, addressed the King County Medical Society, November 7, on "Intermittent Duodenal Stenosis," and Dr. Walter G. Hiltner, Seattle, on "Amebic Dysentery."——Dr. Edwin C. Yoder addressed the Pierce County Medical Society, Tacoma, November 8, on "Tendon Suture," and Dr. Millard T. Nelsen on "Blood Chemistry of Postoperative Conditions"; Dr. William R. Leverton, Tacoma, gave a moving picture demonstration illustrating some phases of physical therapy.

The Talk Campaign.—Dr. William A. Hulbush, Bellingham, recently talked at a luncheon at Burlington on "Girth Control and How to Live So As to Lengthen Your Life."——Health talks are becoming popular in the Yakima Valley; Dr. Henry Storgaard, Yakima, recently addressed the Pomona Grange at Ashue, the Toppenish Commercial Club and the Parker Women's Club on health topics; the community church of Yakima announces that it will dedicate two meetings a year to public health.——A physician will give a talk once a week to the Wesley Club of the university district of Seattle in accordance with a recently announced plan; during October, Dr. Frederick A. Slyfield spoke on "The Common Cold"; Dr. Homer J. Davidson on "The Romantic Story of Preventive Medicine"; Dr. Brien T. King, "Goiter," and Dr. Cline F. Davidson, "The Truth About the Glands."——Dr. James Tate Mason, Seattle, addressed the Rotary Club of Olympia, October 21, on "Health Inventories for Business Men"; Dr. George W. Wimberley recently addressed the Rotary Club of Toppenish, reviewing the development of the profession in medicine; Dr. Henry A. Barner, Bremerton, addressed the Parent-Teacher unit of that city, October 19, on "The Nervous Child." Dr. Albert E. Stuht, state director of health, and chairman of the state board of health, addressed the Public Health Nurses' Association of King County and a group of mothers on health topics.

WISCONSIN

Personal.—An illustrated article in the November *Scientific American* on "Evolution of the Human Eye" sums up many years' work on this subject by Dr. Thomas H. Shastid of Superior.——Dr. Henry C. Werner, for many years a practitioner at Fond Du Lac, has been appointed superintendent of the Wisconsin Memorial Hospital at Mendota, succeeding Dr. Clesson C. Atherton, who returns to his former position as superintendent of the Southern Wisconsin Colony and Training School at Union Grove.——Dr. John M. McEachern, Milwaukee, has accepted an appointment on the staff of the faculty of medicine of the University of Manitoba, Winnipeg.——Dr. Louis F. Jermain, dean emeritus, director and professor of the department of internal medicine, Marquette University School of Medicine, Milwaukee, was recently honored at a testimonial dinner given by the faculty and students, and by the bestowal of a golden key commemorating his years of service to the university; the address on this occasion was made by Dr. Eben J. Cary, director, acting dean and professor of the department of anatomy.

Society News.—Dr. J. C. Heymans, professor of pharmacology, University of Ghent, Belgium, addressed the University of Wisconsin Medical Society, November 14, on "Contributions to the Physiology and Pharmacology of the Vagus and Respiratory Centers," illustrated with lantern slides.——Dr. John O. Dieterle addressed the Medical Society of Milwaukee County, November 11, on "Use of Long Machine Screws in Treatment of Fractures, Osteotomies and Certain Joint Resections"; Dr. Louis M. Warfield, "Some Remarks on Hypothyroidism," and Dr. Carl H. Davis, "Management of Labor," illustrated by motion pictures.——Dr. Harold E. Marsh, Madison, addressed the twenty-fifth anniversary meeting of the Grant County Medical Society, Lancaster, October 24, on "Medical Impressions of Vienna"; Dr. Ira R. Sisk, Madison, and Dr. Oscar B. Nugent, Chicago, on "The Eye in Relation to General Medicine"; Dr. William J. Mayo, Rochester, Minn., "The Relation of Pure Science to Medicine," and Dr. Joseph W. Gale, Madison, "Cancer of the Breast."——Dr. Robert L. Cowles addressed the Green Bay Academy of Medicine, November 9, at St. Vincent's Hospital, Green Bay, on "Thymus Gland Disturbance."

GENERAL

Another Four Weeks of Automobile Fatalities.—For the four weeks ended November 5, there were 686 deaths due to automobile accidents in seventy-seven large cities in the United States reported to the department of commerce, as compared with 676 during the week ending Nov. 6, 1926. For the fifty-two weeks ending November 5, the total for these seventy-seven cities was 6,985 deaths, compared with 6,649 for the fifty-two weeks ending Nov. 6, 1926. The rate for the latter period is 21.7 per hundred thousand of population, and for the earlier period 21, or an increase of 3 per cent in the rate in a single year. During the last year, two cities reported no deaths from automobile accidents, while for the same period a year ago, four cities reported no deaths.

The Government Needs Pathologists.—The U. S. Civil Service Commission announces that competitive examinations will be held for the position of associate pathologist to fill vacancies in the bureau of mines, department of commerce or in the field. The duties are to make pathologic studies to determine the effects of various poisons found in the mining industry; to make autopsies on animals and reports on gross microscopic specimens; to examine bacteriologic specimens received from the field, and to assist in other scientific research. The entrance salaries are from $2,400 to $3,000 with advancement depending on the efficiency of the individual and the vacancies in higher positions. Competitors will not be required to report for examination at any place. Other details will be given on application to the U. S. Civil Service Commission, Washington, D. C., or the U. S. Civil Service Board of Examiners at the postoffice or custom house in any city.

Conference to Arrange for Negro Health Week.—In the office of the surgeon general, U. S. Public Health Service, November 1, a conference of representatives of cooperating organizations was held to arrange for the fourteenth annual observance of National Negro Health Week, April 1-8, 1928. This event is sponsored by the Tuskegee Negro Conference and the National Negro Business League, to cooperate with the state boards of health, and the U. S. Public Health Service, in efforts to extend health work among negroes. It was stated at this conference that from 1910 to 1920 in at least some southern states the negro death rate decreased more rapidly than the white death rate. The steady increase in the negro death rate at this meeting was emphasized. During the next National Negro Health Week, the workers in this movement will aim to get in touch with the many negroes who have not learned of its benefits.

Society News.—At the annual meeting of the Association of Surgeons of the Pennsylvania Railroad, October 1, Detroit, Dr. Samuel B. McGuire, Dover, Ohio, was elected president for the ensuing year; Drs. Orlando H. Petty, Philadelphia, and Harry E. Mock, Chicago, vice presidents, and Dr. Joseph Scattergood, West Chester, Pa., secretary.——Dr. Walter L. Niles, dean and professor of clinical medicine of Cornell University Medical College, New York, was elected president

of the Association of American Medical Colleges at its recent annual meeting in Montreal; Dr. Burton D. Myers, assistant dean and professor of anatomy, Indiana University School of Medicine, Indianapolis, vice president; Dr. Irving S. Cutter, dean and associate professor of medicine, Northwestern University Medical School, Chicago, chairman of the executive committee, and Dr. Fred C. Zapffe, 25 East Washington Street, Chicago, secretary-treasurer. The next annual meeting will be at Indianapolis, October 29-31, 1928.

Arsenic in Tobacco.—A potential source of part of the arsenic in the human body has been found in samples of American tobacco. Roe E. Remington, Ph.D., of the North Dakota Agricultural College, Fargo, who examined a large number of brands of manufactured tobacco in the form of pipe tobacco, cigars, cigarets and chewing tobacco, found arsenic present in quantities greater than the amount generally permitted by the authorities in food. The method used was the micro-Marsh method, which has been in use for several years and is capable of estimating quantities of arsenic as small as one part in ten million. The samples of tobacco examined were found to contain from six to thirty parts per million, or from 0.05 to 0.27 grain of arsenic trioxide per pound. These quantities are much in excess of the maximum permitted by state and federal authorities in foods and of the amounts normally present in plants and animals. That a considerable part of the arsenic in tobacco finds its way into the body cannot be concluded from the work reported by Dr. Remington, and additional examinations of body fluids are being made with a view to determining that point. The investigator does not feel that his data justify drawing any conclusion as to the possibility of chronic arsenical poisoning from the use of tobacco, although such a possibility is not to be dismissed without more evidence.

Census of Institutions for Feebleminded.—Sixty institutions for feebleminded and epileptic patients in thirty-six states, during 1926, had a total of 7,203 first admissions as compared with 6,633 in 1922, an increase of 8.6 per cent, according to a preliminary report of the U. S. Department of Commerce. These patients have not before been under treatment in any institution for the feebleminded and epileptic. It should be considered that the increase in first admissions, particularly when considered by individual states, usually represents an expansion of the facilities and may not be a true indication of the actual increase in the number of feebleminded and epileptic persons in the state. The extent to which provision for the institutional care of such persons has been made is best indicated by the number of patients in the institution on a given date. In the thirty-six states covered by the statement of the department of commerce, the number of feebleminded and epileptic patients in institutions shows a steady increase, as indicated by figures for the beginning and end of the two most recent years for which data are available. For example, on Jan. 1, 1922, there were 39,596; on Jan. 1, 1926, 49,788, and on Jan. 1, 1927, 52,043. The number of such patients under care per hundred thousand of the general population increased from 47.0 on Jan. 1, 1923, to 54.7 on Jan. 1, 1927. The figures are based on reports furnished by the institutions to the bureau of the census through the cooperation of the state agencies.

Fellowships for University Women.—The American Association of University Women announces that fellowships are open to American women, for which applications must be received not later than Jan. 1, 1928. Applicants should give an account of their training and a full statement of the object in view, accompanied by a certificate from the college awarding the degrees received by the applicant, date of birth, testimonials as to health, character and ability, and papers on reports of investigations published or unpublished. A variety of fellowships are offered for university women, quite a few of which do not require a medical education or work along medical lines. The Mary Pemberton Nourse Fellowship, offered biennially, has a value of $1,500. The candidate must have completed at least two years of graduate study tending toward public health work, or two years of practical work in the field of public health. This fellowship may be used for any work along this line which the committee approves. The Sarah Berliner Research and Lecture Fellowship is in effect two fellowships, one or the other being awarded annually; one being a fellowship of $1,200 for research only, the other a docentship of $1,500. This fellowship is available in research, biology, chemistry and physics. The Gamma Phi Beta Sorority offers the Lindsey Barbee Fellowship of $1,000. It is undestood that this fellow will devote herself entirely to preparation for social service in a graduate school of recognized standing. It is open to women graduates who have done at least one year of graduate work, including some courses in social hygiene. Applications should be addressed to the chairman of the committee on fellowships of the American Association of University Women, Dr. Agnes L. Rogers, Bryn Mawr College, Bryn Mawr, Pa. Inquiries may also be addressed to Mrs. Albert S. Hutchinson, 69 Allerton Road, Newton Highlands 61, Mass.

Twentieth Annual Christmas Seal Sale.—For twenty years, the National Tuberculosis Association has been selling Christmas seals to the public around Christmas time, and with the funds thus provided has carried on a campaign against tuberculosis. Hundreds of sanatoriums and preventoriums, where children who have been exposed to tuberculosis, may be built up to resist attack, have thus been provided. Christmas seals have also provided nurses to care for patients with tuberculosis in their own homes, and chest clinics where suspects are examined by physicians.

Since the organization of the National Tuberculosis Association in 1904, the death rate from tuberculosis has decreased more than 50 per cent. One billion and a half of Christmas seals are expected to be sold this year. The 1927 seal, represented here, was designed by John W. Evans, Brooklyn. To sell this huge number of Christmas seals, the National Tuberculosis Association has the assistance of the state tuberculosis associations and more than 1,400 local associations and committees in cities, counties and districts. Their chief reliance is placed on a mailing campaign in which, during the Christmas season, 5,000,000 letters containing from $1 to $10 worth of seals will be sent to prospective purchasers in every state. The Christmas seal campaign is thoroughly advertised. Many industries give advertising space to carry the message of the Christmas seal. Magazines generously give advertising and editorial space. The Christmas seal is sold for 1 cent, but it furnishes the ammunition that is gradually winning the battle against tuberculosis.

FOREIGN

University to Move Department of Medicine.—The Rockefeller Foundation, New York, has given $1,640,000, to the University of Lyons, France. In a dispatch from Lyons to the New York *Times*, November 10, it was stated that this fund will be used to help defray the cost of transferring the department of medicine of the university to the suburb of Monplaisir, where the $4,000,000 Grange Blanche Hospital is being erected. The two institutions will operate in connection with the university when the transfer is effected. Of the remaining sum necessary to defray the expense of transfer, about $480,000 has been promised by Premier Poincaré from government funds, and about $60,000 from the funds of the university.

Infantile Paralysis Abroad.—A review of the infantile paralysis situation by the health section of the League of Nations, Geneva, October 15, showed a prevalence well above normal in various countries, especially the United States, Germany and Roumania. There was nothing in the reports received which would suggest a general outbreak comparable to that in the United States in 1916. The earliest outbreak in 1927 occurred in June in California; a severe outbreak occurred in New Mexico in July, and by the end of that month the epidemic had spread especially to Texas, New York and New Jersey. In August, numerous cases occurred in Ohio, Massachusetts and Connecticut, while fewer cases appeared in most other states. Two large areas, the southern states east of the Mississippi and the northern states west of the Great Lakes, had been little affected up to the end of August. In Europe, the first severe outbreak in 1927 occurred at Bucharest in Roumania in June and July. The outbreak in Germany began early in July in Merseburg, and spread to Leipzig in Saxony. About 758 cases were reported throughout Germany between July 3 and September 17. Poliomyelitis is not notifiable in the countries of eastern Europe, and no information is available regarding them. Thirty-three cases were reported in Austria in the nine weeks ending August 27; twenty-four cases in Switzerland in the six weeks ending September 24. The incidence in Italy, Netherlands and France was low, according to the latest reports. It is probable, the report states, that notification of infantile paralysis in several of these countries is incomplete. In England and Wales, the number of cases markedly increased during the summer, but up to the end of September did not equal the incidence during the same period in 1926, when it was more prevalent than in any previous year. In Japan, notification of poliomyelitis is not compulsory. Reports were received of thirty-two deaths at Kobe, three at Tokyo and one at Osaka during the three weeks ending September 3.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Nov. 5, 1927.

Canadian Physicians to Examine Emigrants in England

Important changes in the system of examining intending emigrants to Canada are to be made. A party of twenty-five Canadian physicians will operate a scheme which will supersede the existing system, now regarded as unsatisfactory, and it is to be put into operation early next month. There is at present much overlapping and waste of time, and the fact that the emigrant has often to pay for examination is also a deterrent. The new departure is an effort to establish a medical service in Britain which will not only secure uniformity and insure that dominion requirements are fulfilled, but will also facilitate migration from this country. It provides for the division of the whole country into areas, for each one of which a physician will be responsible. He will be required to complete a tour of his area once every fortnight, examining emigrants at stated times and places absolutely free of charge. No emigrant will have to travel more than ten miles to the place of examination.

Inability of the Middle Class to Obtain the Best Medical Advice

"The best medical attention in this country under present conditions can be obtained by only two classes, the rich and the poor, and both are attended practically by the same physicians," said Dr. Graham Little, M.P., the dermatologist, addressing the Medical Society of St. Mary's Hospital. "A member of the staff of a great hospital," he continued, "practically divides his day between these two classes; half of his time will be spent in tending the sick poor, for which he gets paid nothing, and the other half in gleaning from the rich the means which enable him to devote himself to his profession, and at the same time to succor the poor without fee. But the middle class remains outside this system altogether. For the average middle-class man a major operation or an acute illness is a financial disaster from which it may take him years to recover. Nowadays it is expensive to be born, and often not less expensive to die, but a prolonged recovery is more costly still.

The Right to Kill

As shown in previous letters to THE JOURNAL, the question of euthanasia, whether physicians should in certain painful and incurable diseases be allowed to end life painlessly, is discussed from time to time in this country. The conclusion has generally been in the negative. An unusual case has just occurred in which a father took this course. The story was a very sad one. A boy joined the army in the war in 1916 when only 16, and served four years overseas. After his discharge he married in 1920. A series of misfortunes soon followed. Through no fault of his own, he could not find work and had to sell his furniture. After the birth of a child his wife became an invalid and developed tuberculosis in 1923, from which she died. He was left with a young family, of which a girl whom he particularly loved also developed tuberculosis. She contracted measles complicated by pneumonia and gangrene. He sat up at night with the child and finally the physician in attendance said that the child was not likely to live through the night. As the father could not bear to see the child suffer, he took her out of her cot and placed her in a bath of cold water. He then went to the police station and gave himself up. He was tried for murder. The attitude of the judge is shown by the following in his charge to the jury: "It is a heartrending story of a father who, driven to distraction by the suffering of his child, takes upon himself to put an end to its suffering. It is a matter which gives food for thought when one comes to consider that had this poor child been an animal, instead of a human being, so far from there being anything blameworthy in the man's action in putting an end to its suffering, he would actually have been liable to punishment if he had not done so." The medical evidence was that the child did not die of drowning but of shock. The father was acquitted.

The following comments on the case have been made by well known men:

Sir W. Arbuthnot Lane: "I see nothing wrong in carrying out the principle of the right to kill, provided always that it is done with due safeguards. I should not give the power to any one physician to take life. I would suggest it be done in consultation with a number of other physicians who had definitely come to the conviction that the patient was incurable and suffering great pain. We don't allow our pet animals to suffer. Why should we allow our loved ones to bear pain when all hope of recovery is impossible?"

Mr. George Bernard Shaw: "It is the business of the jury to some extent to stand between the impossibilities of the law and the person in the dock. I am happy to note upon this occasion that a British jury has recognized its business, inasmuch that it did not find on the facts, but decided the guilt or innocence of the accused. Obviously, before that, they had to find on the facts."

Sir Arthur Conan Doyle, the author, who is a qualified physician: "I think we owe a great debt of gratitude to Mr. Justice Branson. He was very brave. He has set a precedent which I hope will be followed. The right to kill is an act which ought to be properly safeguarded. Three physicians at least should certify that a person is incurable and in great pain, and if the person himself is willing, a painless death should be administered. This is only common sense and common humanity."

An Osteopath Fails to Recover Fees

An action was brought by an osteopath to recover $150 for the treatment of a woman. The defendant, her husband, pleaded that the diagnosis was wrong and that the treatment given was unnecessary and unsuitable. He also relied on the provisions of the medical act which runs: "No person shall be entitled to recover any charge in any court of law for any medical or surgical advice, attendance, or for the performance of any operation, or for any medicine which he shall have both prescribed and applied, unless he shall prove upon the trial that he is registered under this act." The judge held that as the plaintiff was not a registered physician he could not recover fees for advice and treatment, and entered judgment for the defendant, with costs. The plaintiff appealed, and the higher court ordered a new trial on the ground that they were bound by a previous judicial decision that an osteopath was entitled to recover fees for treatment rendered. The osteopath said that he had found evidence of suppuration in the antrum, approximation of the first and second cervical vertebrae, displacement of the coccyx, and half an inch shortening of one leg. His treatment included movement of the cervical vertebrae, reduction by rectum of the displaced coccyx, and administration of ultraviolet rays. In cross-examination he admitted that he did not know the dosage of ultraviolet rays, and agreed that osteopathic treatment was worthless if the suffering could not be relieved by moving the bones. Sir Herbert Waterhouse, consulting surgeon to Charing Cross Hospital, gave evidence that the movement of bones could have no effect whatever on the antrum. He had examined the defendant and found each antrum perfectly normal by transillumina-

tion, and there was no evidence of previous antral disease. It was quite impossible to move a dorsal or lumbar vertebra. Clinical and roentgen-ray examination showed the spine to be normal. The coccyx could not have been moved by the plaintiff without an anesthetic on account of the intense pain that would have been caused. There was no evidence of any shortening of one leg. The defendant gave evidence that she went to the plaintiff on the recommendation of a friend to get rid of faceache, and he told her that he could make her better. She felt better after two or three visits to him, but after that her condition became worse and she stopped going to him because he was doing her no good. She had complained to the plaintiff that his treatment was rather drastic and that once she had nearly fainted on her return home. The judge was satisfied that the treatment could not have achieved any beneficial results, and that the services rendered were wholly useless. He accordingly gave judgment for the defendant, with costs.

Failure to Make an Operator Responsible for the Omission of a Nurse

A case of considerable interest to the profession has just been decided. A well known surgeon, Mr. Neil Sinclair, performed a sigmoidoscopy on a woman under anesthesia. She asked him to select a nurse, as he had said one was necessary for the operation. The patient took a hot water bottle to the operating table from her bed and asked to be allowed to retain it. The nurse agreed, intending to remove it when the anesthetic was given. She forgot to do so and the patient's knee was severely burnt. The woman brought an action for damages against the surgeon, in which it was contended that he was responsible for the negligence of any one assisting him, as the nurse, according to the lawyer, was under his control from the moment the door of the operating room closed. The defense pointed out that the nurse was highly qualified, and that Mr. Sinclair had no idea that a hot water bottle was in the bed. He was not liable for every act or omission of the nurse, who was in no sense his servant. Two well known surgeons were called. One, Mr. Donald Armour, said that a modern surgical operation was a ritual at which, if it was to be successful, every detail must be carried out with meticulous care. Those who were present at an operation constituted a team, each member of which was trained in his duties. As a rule, a surgeon did not interfere to see whether the other members of the team had carried out their particular duties. The preparation of a patient for the operation was entrusted to the nurse, including the task of seeing that hot water bottles were not in dangerous proximity to that patient. The modern nurse was a highly trained and skilled technician, not a surgical "tweenie." He would not regard it as his duty in such a case to ask the nurse whether there was a hot water bottle in the patient's bed. Mr. H. S. Souttar said that unless there was a separation of functions at an operation, it would be impossible to carry on modern surgery. It would be exceedingly dangerous if the surgeon allowed his attention to stray to any matter other than that on which he was engaged. The care of hot water bottles was the function of the nurse.

At the close of the defense, the lord chief justice said that he was satisfied that there was no evidence to go to the jury. The plaintiff's case had been put in two ways. The first and chief contention had been that there was negligence on the part of the nurse for which Mr. Sinclair by reason of his position as an operator was responsible. He would say nothing on the question whether there was any real negligence on the nurse's part. It was very easy to be wise after the event, and what happened might well have been a mere accident. But, in any case, he was satisfied that Mr. Sinclair was not responsible for the negligence, if negligence had existed. It was common knowledge that the nurse was to be paid by the patient herself, and in no sense was she the servant or agent of Mr. Sinclair. There had also been a faint suggestion that there was some personal negligence on the part of Mr. Sinclair. It had been said that, even on the assumption that it was the nurse's duty and not his to attend to the hot water bottles, nevertheless he might have exercised a superintending eye and satisfied himself that there were no hot water bottles in a position likely to cause injury to the patient. That was a far fetched suggestion which was not supported in the evidence. He would therefore withdraw the case from the jury. Judgment was accordingly entered for the defendant.

PARIS

(From Our Regular Correspondent)

Nov. 2, 1927.

French Congress of Orthopedics

The ninth session of the Société française d'orthopédie was held in Paris in October. There were two main questions on the program, the first being "Surgical Treatment of Tibiotarsal Tuberculosis." M. Delahaye of Berck said that immobilization in a plaster cast is the preferred treatment, and should be prolonged for a period of from two to three years, at least. The disease is always associated with marked trophic disturbances affecting the bones and the muscles. Astragalectomy is often required; it is not necessary to fill in the empty space with a graft. It is an excellent operation. The ankylosis that develops is not painful and allows later good use of the foot. It is preferable to mobile nearthrosis, which is painful and entails muscular rigidity. M. Nové-Josserand is an advocate of extirpation, not only of the astragalus but of all the diseased bones, even those that are merely suspected of being involved, the intervention amounting thus practically to posterotarsectomy. M. Trèves recommends prolonged immobilization, a window being left in the bandage at the level of the lesion, which is subjected to intensive heliotherapy for several hours each day.

The chief paper on the second main topic, "The treatment of congenital pseudarthrosis," was presented by Dr. Dujarier of Paris. The treatment is more promising than has commonly been supposed, owing to the progress made recently in the technic of bone grafts. Dujarier prefers the osteoperiosteal graft. A very thin layer of bone tissue adherent to the periosteum is sufficient to obtain a good result. But the consolidation is very slow and the new bony matter is fragile. Absolute immobilization is needed for two months at least; and, for six months longer—often a year—the patient will be permitted to walk only with a plaster cast of the Delbet type, which is renewed every two months. Roentgenograms are taken frequently to control the formation of new bone tissue and to forestall the development of secondary curvatures. Unfortunately, the affected tibia does not develop as well as the sound one, either in length or in thickness, even though the pseudarthrosis does not reappear.

The Reeducation of Deafmutes

M. Frossard, professor in the Ecole des hautes études sociales, has communicated to the Academy of Sciences an interesting method of auditory reeducation based on an old observation of Laënnec. The inventor of the stethoscope made use of a hollow cylinder of light wood, one end of which he applied to his own larynx and the other to the ear of a deafmute. After a few days, the deafmute was able to understand words and pointed out objects that were mentioned. M. Frossard has improved the method, employing a binaural stethoscope, the ear-tubes of which are placed in the two ears of the deaf person, while the main tube is

applied to the larynx or to the cheeks of the operator. The deaf person may also instruct himself by applying the main tube to his own larynx and reading aloud. The apparatus may be used to measure the unequal audition of the two ears by stopping with rubber one of the ear-tubes. It will serve to measure also the degree of deafness. A known weight can be dropped on the tympanum of the main tube from varying heights. The product of the figures representing the weight in grams of the object dropped and the distance, in centimeters, through which it was dropped furnishes a coefficient that enables one to establish a scale of auditory sensitiveness. For example, a 1 Gm. weight dropped from a height of 12 cm. furnishes the index 12.

Traumatic Diabetes

A discussion that developed at a meeting of the Société de médecine légale over the subject of traumatic diabetes, following the presentation of a communication by Dr. Durand, brought out the opinion that this form of diabetes is exceedingly rare. In most cases a diagnosis of traumatic diabetes is based solely on statements made by patients, which are difficult to verify, since it is not easy to establish that they were not previously glycosuric, for analyses are almost always lacking. Prof. Marcel Labbé, who has treated several thousand diabetic patients, stated that he had never encountered a single authentic case. He admits, however, that a small number of observations have incontestable value, and agree with the experiences of Claude Bernard, and, more recently, with those of Camus and de Roussy. Traumatic diabetes must, therefore, not be regarded as impossible, though its great rarity must be borne in mind. It may result from a very violent shock on the cranium or from a traumatism of the vertebral column that had a grave repercussive effect on the brain. The observations in which mention is made of a thoraco-abdominal traumatism appear to M. Labbé very suspicious. A simple negative examination of the urine before the accident is not sufficient proof. In order to be considered as evidence that a given case of diabetes is truly of purely traumatic origin, the appearance of the glycosuria must follow soon after the accident, and the subject must not present any hereditary tendency to diabetes, nor any pathologic past (syphilis) or any weakness that establishes a predisposition to diabetes.

The Franco-Belgian Medical Convention

A convention of French and Belgian physicians was held recently at the University of Lille. Professor Lemière of Paris gave a lecture on azotemia; M. Baudouin discussed the therapeutic use of insulin, and M. Dujarric de la Rivière, of the Pasteur Institute, spoke on the discovery of recent serums and vaccines. Commemorative ceremonies were held at the university in front of the monument erected to the memory of the physicians and students of Lille who fell in the recent war, and a palm was placed on the monument.

The Centenary of a Medical Society

The Société de médecine of Mans and the department of Sarthe, probably one of the oldest medical societies of France, the founder and first president of which was Dr. Mallet, has just celebrated its centenary under the chairmanship of Dr. Delagenière. For his address, which was replete with anecdotes, Dr. Delannay chose the subject "A Hundred Years of History of the Société de Médecine of Mans." A group of amateur players presented a farce by Henry Monnier (1830), entitled "The Nurse"; also the third act of Jules Romains' comedy, "Knock, or the Triumph of Medicine," which is well known, in which the general public saw only a satire on physicians but which is, in reality, a satire on the credulity of the public itself.

ITALY

(From Our Regular Correspondent)

Oct. 30, 1927.

Ambulant Antituberculosis Dispensaries

Dr. A. Del Bue of Verona discussed recently the organization and the functioning of the bodies that he proposes to call "ambulant antituberculosis dispensaries." These institutions are connected with the Associazione antitubercolare medici condotti, and serve the following purposes: (1) to ascertain the incidence of tuberculosis in each province, and to determine the number of tuberculous subjects and the degree of danger to society and to the family; (2) to follow the course of the pandemic, emphasizing all the direct means of combating tuberculosis, and (3) to draw conclusions with reference to the march of the pandemic and the activities of the antituberculosis societies. Each province is divided into zones, at the head of each of which is a medical officer who serves as a connecting link between the medical directors and the Presidenza sezionale dell'associazione antitubercolare.

Provisions for the Protection of the Public Health

The new Penal Code contains a number of provisions pertaining to the protection of the public health. The penalties for the poisoning of water and the adulteration of food products, for selling or administering injurious foods or spoiled medicaments, and for clandestine trade in narcotics, are made much heavier. A paragraph of the new code establishes, furthermore, that whoever causes an epidemic by the dissemination of pathogenic bacilli or micro-organisms shall be subject to a prison sentence, and if thereby the death of persons results, the death penality may be imposed.

Whoever, though he may have no intention to infect another person, being affected with syphilis or by some other venereal or secret disease of like import, commits such acts with another person as to cause infection in that person shall be subject to imprisonment up to two years. If the death of the person thus infected shall result, the penalty shall be increased to from two to eight years.

The Suppression of Fraud in the Trade in Food Products

A recent decree modifies the regulations with regard to the preparation and sale of certain agrarian products. Fruit products may not ordinarily be colored with foreign substances, but an exception is made with reference to marmalades and preserves of strawberries, cherries and prunes, in which it is permissible to use harmless coloring material to restore the natural color of the fruit lost in the washing and canning process, provided the sanitary regulations otherwise in force are not opposed to such use. The labels on the containers must state, however, what substances have been used. The preparation of artificial fruit preserves is permitted provided harmless coloring material is used and the label states clearly the nature of the product.

The term of "manna" may be used only for the product derived from the incision of the common ash or *Fraxinus ornus*. It is forbidden to prepare and offer for sale "manna" containing foreign substances other than the natural impurities in the proportions permitted in the various kinds of "manna."

A Manual on the Hygiene of Childhood

The Società di igiene of Milan has opened a competitive test among Italian physicians for the compilation of a manual on the hygiene of children of the 8 to 15 age group. The volume will treat all the subjects pertaining to the development of the child: alimentation, clothing, physical and mental training, the problems of sexual life, vocational guidance, and the like. The manual will form part of the collective work "L'Allevamento Umano," which is being pub-

lished under the auspices of the Cooperativa Farmaceutica of Milan and which consists at present of the following volumes: advice to expectant mothers, the hygiene of infancy, and the hygiene of children of the 1 to 7 age group.

BUDAPEST

(From Our Regular Correspondent)

Oct. 13, 1927.

The Source of Fatigue

In a recent lecture on fatigue, Dr. J. Kunze said that a practical method of determining the measure of fatigue is to trace the tired feeling to its source, to discover whether it is situated in that part of the system which has recently been exerted. Thus, if work has been done with the brain, and the tired feeling comes in the legs, which have been resting, it cannot be regarded as indicating any approach to overwork. It is easy to misunderstand the mental and physical sensations that are experienced from time to time; for instance, if a person who has just returned from a walk and experiences a sensation of fatigue stretches himself on a couch and laments a loss of his physical strength, his weariness may have nothing whatever to do with his muscles. What he imagines to be bodily fatigue may be purely the result of a mental condition arising from lack of pleasant companionship, or from a sense of having been bored. What his person needs is not rest in the sense of bodily inactivity but another and brisker walk, or else some active mental exertion. The cry for less work has no basis in fact. What is wanted, rather, is reform in the method of working, and that in individual cases.

What Is First Aid?

An ex-dispenser, who is "in practice" as a "patent medicine" vender in a provincial town, has been committed for trial on a charge of wilful negligence, under peculiar circumstances. A girl, aged 14, was struck in the left armpit by a protruding branch of a tree, and her wound was dressed by the accused. Some days later the girl's condition became worse and shortly afterward she succumbed to sepsis. Investigation revealed that, in dressing the wound, the accused employed wadding and bandage that had been already used on another patient. The ex-dispenser defended himself on the ground that he did nothing more than provide "first aid" and the coroner's jury acquitted him of blame. The matter, however, has been taken up by the public prosecutor.

Mental Degeneration and Drinking

The number of persons of unsound mind in Hungary is ever on the increase. The medical journals of the country are drawing attention to this fact, adding that 25 per cent of this insanity is caused by drink. This is the most frequent cause of lunacy, said the late president of the Good Templar order, and the children of drunkards may be either insane or drunkards themselves. He suggests the following rules, recommended years ago by an English physician, for checking the development of mental degeneration at the present day: 1. Those who have been insane once should not be allowed to marry. It may be stated as a certainty that many women who have had one attack of lunacy would have kept exempt from a second attack had they not married. The ordinary rule of hereditary transmission is from the parents uninterruptedly to the children, and from them to the grandchildren, frequently with an interruption from the grandchildren's parents to the grandchildren. Sometimes this taint is communicated through the collateral branches. 2. Immediate legislation should be passed for compulsory confinement of habitual drunkards, who are the greatest propagators of lunatics and degenerates, and who should therefore be legally restrained from inflicting their own vice on other human beings. 3. Marriage of habitual drunkards should be prohibited. 4. It should be illegal to mary when hereditary insanity exists on both sides. 5. The paralytic, epileptic, tuberculous and cancerous should not be allowed to marry. 6. Care should be exercised in the administration of alcohol to women, as this may make drunkards or lunatics of the offspring. 7. General information on marriage, with certain health requirements, should be published. 8. The liquor trade should be restricted. 9. Half-way houses, so to speak, where those suffering from acute but curable insanity could be placed instead of being incarcerated in lunatic asylums, should be established. 10. All children born of nervous or neurotic parents should be removed from their influence as soon as possible, and from all their home associations.

The Standardization of Drugs

An address was given in the Pharmaceutical Society by professor Vámossy on the standardization of drugs, a subject which, in the rush of other matters, is apt to fall outside the ken of medical men, on account of the technicalities that surround it. The matter, however, is one which, though the clinician may not be able to follow it into all its ramifications, is of vital importance in the progress of medicine and one with which he should keep closely in touch. Much of the discredit that has been cast on galenicals by the leaders of the medical sciences is undoubtedly due to the variations that have occurred in the strengths and potencies of preparations at different times, said Professor Vámossy. It must be borne in mind that, unless all drugs are standardized, a factor of error of such magnitude is introduced into therapeutics as may vitiate all conclusions derived from clinical observations. As he pointed out, in the administration of medicines one should note whether the mixed alkaloids of a given drug act as well as or differently from a preparation containing the leading ingredient alone. Again, it should be determined whether an alkaloid derived from one source is similar in action to a chemically similar one derived from another. Pharmacy, said Dr. Vámossy, will continue to be largely what the pharmacist qualifies himself to make it, but it will also be entirely what the physician demands that it shall be.

VIENNA

(From Our Regular Correspondent)

Oct. 24, 1927.

Congress on the Diseases of Metabolism

The seventh congress of the Gesellschaft für Stoffwechsel- und Verdauungskrankheiten was held during the first week in October. The society was formerly a section of the Congress of Internal Medicine, but for the past eight years has had an independent existence. About 720 physicians from Germany, Hungary, Switzerland, Sweden, Czechoslovakia—and Austria—attended the congress. Approximately 600 communications and demonstrations were presented before the congress, which had convened in Vienna for the second time. The three main topics on the program were: (1) osmosis and its regulation in metabolism; (2) disturbances of passage through the intestine, together with stone formation, and (3) diabetes. On each of the topics, as is now the custom at German medical congresses, one paper was presented by a theoretician and one or two papers were given by clinicians. The congress was opened with an address by the chairman, Professor Biedl, in which he emphasized especially that antagonism between scientific and practical medicine does not exist.

Only the most important papers and addresses can be discussed. The first paper, that of Professor Höber, Kiel, was read by the chairman, as the author was unable to appear. It dealt with the subject, "The Physiologic Conditions of Osmoregulation in the Human Body." A fine mechanism preserves the equilibrium between acids and bases, and causes, on an exclusively meat diet, the acid content of the body to

rise, and, on a purely vegetable diet, increases the alkaline production. In the resorption of food, osmosis plays the most important rôle. The regulation of the osmotic pressure exerted by the blood plasma is accomplished by the lungs, the sweat glands and the kidneys. The clinical importance of metabolism research was discussed by Koranyi of Budapest and Porges of Vienna. The former discussed the development of edemas in clinical practice. Combating water retention by diminishing the salt content of the edema fluid gives good results. Professor Porges pointed out the value for both diagnosis and treatment of researches on the reactions occurring in the blood. We can differentiate thereby coma resulting from diabetes, apoplexy and overdoses of insulin. By determining the carbon dioxide tension in the alveolar air, the various forms of dyspnea can be differentiated. The disturbances in the secretion of gastric juice can be ascertained by testing the respired air after a meal.

Professor Balint of Budapest presented a paper on "Regulation of Tissue Reactions," in which he brought out that changes in the physiochemical structure of the tissues—especially of the cells in the respiratory center—play a great part in the regulation of tissue reactions. In gastric ulcer, an acid reaction prevents the formation of granulations, or the healing of tissue defects; an alkaline reaction causes the prompt healing of an ulcer.

In discussion, the *"durstkur,"* or thirst treatment, of Prof. Dr. Singer of Vienna, by which he has been able favorably to influence severe, purulent lung processes was mentioned. Steyskel of Vienna mentioned serous meningitis and hydrocephalus as possibly being caused by changes of the water pressure in the central nervous system and its canals.

The second main topic was "intestinal occlusion." Professor Tandler of Vienna pointed out the importance of the fetal period of intestinal growth.

The pharmacologic problems of the intestinal passage were considered by Prof. Dr. Katsch of Frankfort-on-the-Main. He emphasized that animal experiments do not furnish indisputable criteria for the functioning of the human intestine. Furthermore, the analysis of intestinal peristalsis by inspecting surviving intestinal loops does not furnish compelling evidence as to the behavior of the intestine in the intact organism. He stated that, under normal conditions, not the slightest amount of material can revert from the intestine to the stomach.

Schwarz of Vienna said that a roentgenologic examination should be employed to exclude apparent occlusion due to slight paresis or to spastic conditions. Also, timely diagnosis of carcinoma of the colon and the differential diagnosis between an inflammatory tumor and a neoplasm of the colon are made possible by roentgen rays. Schwarz recommends that the patient call attention to any situs inversus of which he may know in order to avoid errors in diagnosis, later. Von den Velden of Berlin discussed the clinical symptoms of intestinal occlusion, especially the borderline cases, diagnosis of which causes much difficulty. Professor Braun of Berlin distinguishes between the "destructive" and the "accumulative" occlusions resulting from stasis. To the former belong constriction and inner incarceration, volvulus of the small or of the large intestine, and invagination; in the second group may be classed kinking, neoplasms, and inflammatory swellings. In the discussion Köhler of Berlin said that he uses for the treatment of intestinal paresis an injection of small quantities of nicotine into the solar plexus; Boas and Klettner recommend lavage of the intestine with from 50 to 100 liters of physiologic sodium chloride solution. Glässner of Vienna was able to demonstrate indole in the expired air in association with intestinal occlusion; likewise tyrosine in the urine. Przibram demonstrated a case in which nine operations for intestinal occlusion had been performed. A lasting cure was finally effected through the resection of the solar plexus.

The problem of stone formations received considerable attention at the congress. Professor Fürth presented a paper on the physiologic chemistry of the stones found in the urinary bladder and the gallbladder. Naunyn expressed the view that an inflammation of the gallbladder wall (bacterial invasion possibly) is the cause for the precipitation of cholesterin. It is held by some that at the time of menstruation the blood is much richer in cholesterin (likewise during pregnancy). Thus is explained the greater frequency of gallstones in women in contrast with men. The second most important place for the formation of stones is the urinary tracts. It appears that there is a predisposition of the body necessary for stone formation; possibly also a general low state of nutrition. Herxheimer of Wiesbaden found in pigment stones considerable quantities of copper (copper is excreted by the normal liver); also sulphur. Lichtwitz of Altona has observed that in women gallstones are four times as frequent as in men, and also that pregnancy or childbirth can cause gallstone formation. Gallstones are often formed within a few days. He believes that the disintegration of stones can be accomplished by means of ferments. He holds also that the present frequent use of heavy metals for therapeutic purposes favors stone formation, for minute quantities of heavy metals in experimentation cause an immediate precipitation in the bile. The roentgenologic examination of gallstones by means of iodine-containing, opaque substances injected into the liver and gallbladder was discussed. Bergmann of Berlin and Jonas of Vienna emphasized that stone formation was a partial manifestation of changes affecting the whole digestive apparatus. Forsell of Stockholm asserted that neither in the stomach nor in the intestine are there constant folds of the mucous membrane.

On the last day, which was devoted to the problem of diabetes, a paper was presented that was the chief point of interest at the congress. Prof. Dr. Loewi of Graz announced his discovery of a substance in the blood of diabetic patients which is produced in the liver and which is the real cause of diabetes. Professor Loewi has assigned to the new substance the name "glycemin," and he has been able to demonstrate that its secretion is the immediate cause of the accumulation of sugar in the blood. Whereas insulin, it is believed, acts in such a manner that sugar is better utilized, in that sugar fixation to the cell is increased, glycemin [Gly-ce′-mĭn] exerts an action just the opposite to that of insulin, in that it prevents the fixation of sugar to the cells. The curative effect of insulin consists, therefore, in inhibiting the action of glycemin. In normal persons the pancreas and the liver act in harmony. The increased blood sugar content excites a secretion of insulin from the pancreas. An increased glycemin production can be brought about experimentally either by removal of the pancreas or by increasing the epinephrine content (injection or stimulation of the suprarenals by decreased blood sugar). The cause of diabetes was formerly sought in an impairment of the function of the pancreas. Now we know that the primary cause lies in a disturbance of the liver function, resulting in an immoderate production of glycemin, which induces secondarily a lesion of the pancreas. The sugar needed for the metabolism processes does not reach the tissues and cells because the glycemin prevents this. Thus, an accumulation of sugar develops in the body fluids, and passes over into the urine. Professor Loewi succeeded, for the first time, in showing that the liver takes part in the whole endosecretory process.

A great many participated in the discussion that followed. While a number showed a willingness to accept Loewi's statements, others were inclined to oppose his views.

BERLIN

(From Our Regular Correspondent)

Nov. 5, 1927.

The Hygiene of Transportation Services in Berlin

Professor Friedberger, head of the Forschungsinstitut für Hygiene in Berlin-Dahlem, discusses in the November 4 issue of the *Deutsche medizinische Wochenschrift* some of the defects of public hygiene. He censures the cheaper class of apartment buildings. On the other hand, he objects also to the founding of settlements at too great distances from the city, on the ground that the inhabitants of suburbs lose too much time in getting into the city, and, owing to the hygienic defects in the transportation services, are exposed to many dangers. Placing the population of Berlin at four million and assuming that one half, or two million, are gainfully employed, he figures that thirty-seven million working days are lost in traveling to and from work. With the Bechstein "luxmeter" he found that the lighting of the street railway lines was fairly satisfactory. The illumination of the autobusses was inferior to that of the street railway. In the subway the illumination is uneven, because of the poor arrangement of the lamps. The illumination in the cars of the Stadtbahn and on the platforms of the stations is the least satisfactory. Friedberger demands adequate illumination in all public conveyances, especially in those in which the strain on the eyes, owing to the constant jolting, is increased, as, for example, in the autobusses.

The Death of Prof. O. Hildebrand

Prof. O. Hildebrand, who, until recently, was director of the Chirürgische Klinik der Charité in Berlin, has died at the age of 68. Hildebrand was a native of Switzerland, but all his medical studies were carried on in Germany. He wrote treatises on the treatment of goiter. Of monographs and textbooks, he published "Die Tuberkulose" in "Die Deutsche Chirurgie," his textbook on general surgery, and outlines of surgical and topographic anatomy. For many years, he was the editor of the *Jahresberichte der Chirurgie*. Hildebrand was distinguished for his talent for music.

The Twenty-Fifth Anniversary of the German Society for Combating Sexual Diseases

The twenty-fifth anniversary of the Deutsche Gesellschaft zur Bekämpfung der Geschlechtskrankheiten has taken on special significance, owing to the fact that the federal law pertaining to the combating of sexual diseases has recently gone into effect. This legislation is due mainly to this society, and, more particularly, to its former general secretary Professor Blaschko, now deceased. In the annual session, at a special meeting, the significance of the new federal law was discussed from several angles; from the standpoint of general hygiene, by Dr. Breger, member of the federal bureau of health; from the standpoint of the woman, by Madame Pappritz, the champion of abolitionism so called (abolition of reglementation and the resulting registration, periodic inspection and police supervision of prostitutes); from the standpoint of social legislation, by the president of the federal bureau of insurance; from the communal standpoint, by a representative of the German league of cities (*Städtetag*), and, finally, from the medico-legal standpoint, by a member of the federal ministry of justice.

Congress of the German Medical League for the Advancement of Physical Education

During the latter part of October, the fourth congress of the Deutscher Aerztebund zur Förderung der Leibesübungen was held in Berlin. The chairman of the league, Obermedizinalrat Mallwitz, of the Prussian ministry of public welfare, stated, in his opening address, that the league has at present 2,500 members. The following papers, among others, were presented at the congress: Aschoff (Freiburg), heart enlargement and heart weakness; Rautmann (Freiburg), overexertion of the organs of circulation by muscular work; Bruns (Königsberg), the size of the heart in relation to muscular work, and Mangold (Berlin), the relations of respiration to circulation, during breathing. A number of physical contests were held. The congress adopted a resolution in which its previous demand for the introduction of a daily gymnastic drill was repeated.

The Seventieth Birthday of Adolf Gottstein

November 2, Prof. Adolf Gottstein celebrated his seventieth birthday. Gottstein was well along in years when he obtained an opportunity to show his ability in the fields of his special endowments. For many years he was a practicing physician in Breslau and in Berlin. At the same time, he devoted himself constantly to epidemiology. During the height of the general enthusiasm over bacteriologic discoveries, he reached the conclusion that bacteriology was assuming a onesided standpoint with respect to the origin and dissemination of infectious diseases and that individual disposition and the nature of the surroundings play an important rôle. He did not reduce his views to writing, in connected form, until 1895, when he published his monograph, "Epidemiologic Studies on Diphtheria and Scarlet Fever," which was followed by his more comprehensive work on general epidemiology. His continued researches led him to establish social hygiene as a special field. In collaboration with a number of other authors, he is preparing a large manual of social hygiene, and serves also as editor of a journal that he founded which deals with all questions of interest to hospitals. He has published also a number of small textbooks and separate articles on subjects pertaining to social hygiene.

Measles and Tuberculosis

City Physician Klein, who is connected with the tuberculosis welfare center in Essen, discusses in an article in *Brauer's Beiträge zur Klinik der Tuberkulose* the relations between measles and tuberculosis. In connection with an epidemic of measles that occurred, with severe catarrhal symptoms, in the summer of 1925, Klein was able to demonstrate that measles furnishes an excellent soil for the development of tuberculosis and is capable of reviving a quiescent process. Dr. Klein advises, therefore, compulsory notification of measles cases in families with infective tuberculosis, in order that children who are thus endangered may be rigidly supervised.

Marriages

THOMAS EUGENE KEAVENY, Keithsburg, Ill., to Miss Lenore Florentine Lane of Cascade, Iowa, in Omaha, October 23.

STAIGE DAVIS BLACKFORD, University, Va., to Miss Lydia Harper Fishburne of Charlottesville, August 20.

GEORGE MILTON KNOWLES, New York, to Miss Helen Rose Fielder of Princeton, N. J., September 14.

KARL W. HORN, Lewisburg, Ohio, to Miss Mary Elizabeth Niswonger of Pitsburg, September 10.

KEITH G. BURNS, Seattle, to Miss Madeline Muriel Willett of Atascadero, Calif., September 12.

SAMUEL SCHMERZLER, Brooklyn, to Miss Anna R. Netzer of New York, October 30.

RALPH W. WILLEFORD to Miss Maud Grund, both of Indianapolis, August 27.

HENRY F. MCCUSKER, Providence, R. I., to Miss Alice Smith, August 20.

ADY ROYAL MCKEOWN, Seattle, to Mrs. Laura Langan, recently.

Deaths

Herbert Swift Carter ✠ New York; Medical Department of Columbia College, New York, 1895; assistant clinical professor of medicine at his alma mater; member of the American Gastro-Enterological Association; on the staffs of the Presbyterian, Lincoln, New York Skin and Cancer and the Booth Memorial hospitals, New York, and the Northern Westchester Hospital, Mount Kisco; author of "Diet Lists of the Presbyterian Hospital" and "Nutrition and Clinical Dietetics"; aged 58; died, October 25, at the Union Memorial Hospital, Baltimore, after an operation for duodenal ulcer following a previous gastro-enterostomy.

David H. Rowe ✠ Washington C. H., Ohio; College of Physicians and Surgeons, Baltimore, 1892; past president of the Fayette County Medical Society; county coroner; trustee of the Mount Logan Sanitarium, Chillicothe, and on the staff of the Fayette County Children's Home; aged 63; died, October 21, of heart disease.

John Luther Hutchison ✠ Pontotoc, Texas; Vanderbilt University School of Medicine, Nashville, Tenn., 1889; president of the McCulloch County Medical Society; aged 66; died, August 21, at the Brady (Texas) Sanitarium, of complications, following a carbuncle.

Malcolm McLean Morrison, Sawtelle, Calif.; University of Edinburgh, Scotland, 1910; served with the Royal Army Medical Corps during the World War; aged 49; died, October 2, at the Soldiers' Home Hospital, of pulmonary tuberculosis.

Augusta Madison Keim, Newark, N. J.; Woman's Medical College of the New York Infirmary for Women and Children, 1899; formerly on the staff of the Presbyterian Hospital; aged 55; died, October 12, of arteriosclerosis and endocarditis.

Simon Wendkos, Philadelphia; University of Pennsylvania School of Medicine, Philadelphia, 1907; formerly superintendent of Mount Sinai Hospital and on the staff of the Howard Hospital; aged 49; died, October 12, of heart disease.

Thomas Carl Walker, Asheboro, N. C.; Medical College of Virginia, Richmond, 1895; first lieutenant, U. S. Army, retired; aged 56; died, October 8, at a hospital in High Point, of injuries received when struck by an automobile.

Maurice Decker Youngman, Atlantic City, N. J.; New York Homeopathic Medical College, 1880; for many years member of the city board of health; aged 70; died suddenly, October 16, at Wernersville, Pa., of angina pectoris.

George Pierre De Tuncq, Sunnyvale, Calif.; Hahnemann Medical College and Hospital, Chicago, 1917; aged 35; died, October 16, at the Wakefield Hospital, San Francisco, of acute myocarditis and appendicitis.

Charles Wellington Durst, St. Elmo, Ill.; University of Wooster Medical Department, Cleveland, 1879; also a druggist; aged 74; died, September 21, of acute intestinal obstruction due to chronic appendicitis.

Frederick W. Abeken, St. Louis; Missouri Medical College, St. Louis, 1876; member of the Missouri State Medical Association; aged 81; died, September 29, of uremia and hypertrophy of the prostate.

James G. Watson, Juniata, Pa.; Philadelphia University of Medicine and Surgery, 1876; member of the Medical Society of the State of Pennsylvania; aged 76; died, August 17, of chronic myocarditis.

Eugene W. Lomax, Bluefield, W. Va.; Leonard Medical School, Raleigh, N. C., 1902; physician in charge and proprietor of a hospital bearing his name; aged 50; died, September 30, of pneumonia.

Morris Sharpe, Tilbury, Ont., Canada; University of Western Ontario Medical School, London, 1891; formerly mayor of Tilbury and member of the board of education; aged 68; died, August 22.

Thaddeus Sidney Conover, Flint, Mich.; Michigan College of Medicine and Surgery, Detroit, 1891; member of the Michigan State Medical Society; aged 54; died, April 11, of angina pectoris.

Edward Dominick Farrell, Halifax, N. S., Canada; Dalhousie University Faculty of Medicine, Halifax, 1899; died, October 16, at the New York Post-Graduate Hospital, New York.

Jacob Teschner ✠ New York; Medical Department of Columbia College, New York, 1881; aged 68; died, October 23, at the Mount Sinai Hospital, of esophageal diverticulitis.

Louis Rosenbaum, New York; Medical Department of the University of the City of New York, 1893; aged 58; died, June 1, of progressive muscular atrophy and pneumonia.

Franklin Reyner, Epworth, Iowa; Rush Medical College, Chicago, 1875; member of Iowa State Medical Society; aged 86; died, September 2, of cerebral hemorrhage.

Charles Harden Patterson, Choteau, Okla.; University of Arkansas School of Medicine, Little Rock, 1896; aged 69; died, October 8, of meningitis following otitis media.

Harry C. Mullen, Cincinnati; Eclectic Medical Institute, Cincinnati, 1896; Cincinnati College of Medicine and Surgery, 1897; aged 57; died, October 5, of acute nephritis.

Alfred C. Beetham ✠ Bellaire, Ohio; Starling Medical College, Columbus, 1896; formerly on the staff of the City Hospital; aged 55; died, October 8, of angina pectoris.

Spencer Willard Garwood, East Liberty, Ohio; University of Michigan Medical School, Ann Arbor, 1865; Civil War veteran; aged 92; died, September 16, of senility.

Power Gribble, Nashville, Tenn.; University of Tennessee College of Medicine, Memphis, 1899; aged 51; died, October 10, of carcinoma of the liver and stomach.

Edward Augustine Knowles, Revere, Mass.; Tufts College Medical School, Boston, 1912; served during the World War; aged 46; died, September 18, of pneumonia.

Albert Ayres Wells, Indianapolis; Long Island College Hospital, Brooklyn, 1878; Civil War veteran; aged 79; died, September 28, of carcinoma of the stomach.

Edward Alexander Crow, West Palm Beach, Fla.; Eclectic Medical University, Kansas City, Mo., 1914; aged 36; died, September 21, of cirrhosis of the liver.

Cassius M. Cardot, Erie, Pa.; University of Pittsburgh School of Medicine, 1896; formerly county coroner; aged 60; died, September 13, of pernicious anemia.

Thomas Kenning, Detroit; Michigan College of Medicine, Detroit, 1881; for fourteen years city physician; aged 74; died, September 6, of bronchopneumonia.

Francis Burrington Burnum, Cullman, Ala. (licensed, Alabama, 1886); for many years county health officer; aged 74; died, August 2, of general paralysis.

Edward James Tucker, New York; Medical Department of the University of the City of New York, 1885; aged 66; died, October 8, of chronic myocarditis.

Columbus C. Gunnels, Little Rock, Ark.; St. Louis College of Physicians and Surgeons, 1902; aged 54; was killed, October 2, in an automobile accident.

Lynn Bobo Roebuck, Italy, Texas; Louisville (Ky.) Medical College, 1872; also justice of the peace; aged 77; died, September 20, of angina pectoris.

Lewis J. Lyman, Manhattan, Kan.; Bellevue Hospital Medical College, New York, 1862; Civil War veteran; aged 89; died, September 30, of senility.

Gustaf Adolf Goetsch ✠ Chicago; Rush Medical College, Chicago, 1898; aged 57; died, September 28, at his home in Oak Park, of heart disease.

Henry H. Duley, Smithland, Ky.; Cincinnati College of Medicine and Surgery, 1881; aged 86; died, October 3, of carcinoma of the stomach.

Stuart E. Phelps ✠ Farmington, Conn.; McGill University Faculty of Medicine, Montreal, Que., Canada, 1899; aged 55; was drowned, June 29.

George Charles Stockman, Mason City, Iowa; Rush Medical College, Chicago, 1879; aged 74; died, September 16, of uremia and chronic nephritis.

Percy Titus Heaslip, Desboro, Ont., Canada; University of Toronto Faculty of Medicine, Toronto, 1924; aged 31; died in October.

Ira J. Lee, Middle Falls, N. Y.; Medical Department of the University of the City of New York, 1886; aged 70; died, July 21.

Fountain G. Moss, Royston, Ga.; University of Georgia Medical Department, Augusta, 1885; aged 65; died, September 24.

George Ahern, Quebec, Que., Canada; Laval University Faculty of Medicine, Quebec, 1911; aged 40; died, September 3.

Arvid Mitchell Krueger ✠ Chicago; Rush Medical College, Chicago, 1925; aged 26; was found dead, October 18.

Giles M. Brattain, Antwerp, Ohio; Columbus Medical College, 1890; aged 64; died, October 16, of erysipelas.

William D. Clinton, Pittsburgh; Leonard Medical School, Raleigh, N. C., 1890; aged 64; died, August 8.

Henry D. Miller, Kurtz, Ind. (licensed, Indiana, 1897); aged 75; died, July 1, of chronic nephritis.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

SEEQIT

A New Way of Marketing "Patent Medicines"

"Seeqit," an ordinary analgesic tablet, is put on the market by a concern known as Laboratories JAQ Inc., of New York City. The method of introducing this nostrum is unusual. Instead of advertising the product in the newspapers and placing it on the shelves of the drug stores, Laboratories JAQ Inc. circularize women's colleges and such large industrial concerns as employ many women. These circular letters suggest that Seeqit be distributed to the women when they are more or less incapacitated for work by menstrual disturbances. Seeqit is described as "the great industrial tablet which will create 100 per cent efficiency and bring health and happiness to your women workers."

According to Laboratories JAQ Inc., the following large concerns hand out Seeqit to their women employees:

Standard Oil Company
National Biscuit Company
Atwater Kent Manufacturing Co.
Curtis Publishing Company
Equitable Life Insurance Company
Quaker Hoisery Company
Clark Thread Company
National City Bank
United Throwing Company
Atlantic & Pacific Tea Company

Of course, this "patent medicine" is puffed by means of testimonials. One of the testimonials is a reproduction of a letter from G. H. Van Emburgh, M.D., Medical Director of the Clark Thread Company of Newark, New Jersey. According to Dr. Van Emburgh, the medical staff of the Clark Thread Company has been using Seeqit, and the women employees, according to the doctor, "have taken to Seeqit rather enthusiastically." Dr. Van Emburgh states that "it is the opinion of the medical staff of our company that Seeqit is efficacious in relieving dysmenorrhea and, therefore, they are going to use it in the place of a product that had been used for six or eight years past."

Another piece of puffery sent out by the Seeqit concern is a full-page reproduction of a letter from S. J. Repplier, M.D., medical director of the Curtis Publishing Company. It may be remembered that the Curtis Publishing Company issues the *Ladies' Home Journal*, one of the first lay publications to warn the public against the dangers of "patent medicines." Dr. Repplier states in his letter that Seeqit was administered to eighty-five women in the employ of the Curtis Publishing Company, eighty of whom were relieved and only five failed to receive any benefit. Says Dr. Repplier: "I am, therefore, quite satisfied with the effects we have obtained and have just mailed to the company, under separate cover, our second order for your product."

When the American Medical Association first began receiving inquiries regarding Seeqit, a letter was written to Laboratories JAQ Inc., asking the concern whether it cared to send any information regarding the composition of its preparation. The company, after some hesitation, sent in what purported to be the names and quantities of the essential ingredients of Seeqit, but stated in the letter that it authorized such information to be given out only to "any duly registered physician" and not in any other way. The letter was returned, with the statement that, as the Association gets as many letters from laymen as it does from the medical profession, and as Seeqit is for the use of the general public rather than the medical profession, and as, further, the American Medical Association accepts no information regarding the composition of medicinal products in confidence but only for the purpose of passing on such information to those who have a moral right to it, the information furnished could not be accepted under the restrictions imposed. Laboratories JAQ Inc. then replied that they were willing that the Association should give the information regarding the composition of Seeqit to any physician or layman who inquired, but that it would not authorize its publication in any other way.

In view of these restrictions, original specimens of Seeqit were obtained and turned over to the A. M. A. Chemical Laboratory for analysis. The laboratory report follows:

LABORATORY REPORT

"One original carton of Seeqit (Laboratories JAQ Inc., 119 West 57th Street, New York) was submitted to the A. M. A. Chemical Laboratory for examination. The carton contained 100 glazed envelopes, each containing one white, odorless tablet; the average weight of each tablet was 0.4 Gm. (approximately 6⅛ grains). No statement as to the composition was given on the trade package, or on the individual glazed paper envelopes.

THE CLARK THREAD COMPANY
Newark New Jersey
July 20, 1927.
LABORATORIES JAQ INCORPORATED,
119 west 57th Street,
New York, N. Y.
Gentlemen:
We have tried your product "SEEQIT" for dysmenorrhea,
during the past three months.
Our factory force, which is made up largely of females,
have taken to "SEEQIT" rather enthusiastically because of its pain-
relieving properties, and convenience.
It is the opinion of the medical staff of our company
that "SEEQIT" is efficacious in relieving dysmenorrhea, and besides
having no obnoxious taste or odor, is convenient to carry and take.
We shall, therefore, in place of the product we have been using for
the past six or eight years, continue to dispense "SEEQIT" at our
Plant Hospitals.
Very truly yours,
Medical Director
G.H.Van Emburgh,M.D.
S.P.
THE CURTIS PUBLISHING COMPANY
September 16, 1927.
Laboratories JAQ Inc.,
119 W. 57th Street,
New York, N.Y.
Attention - S.J.Repplier
Dear Mr. Repplier,
Two pieces of Seeqit advertising—greatly reduced. Why "medical directors" if "patent medicines" are to be prescribed?

"Qualitative tests indicated the presence of lactose (milk sugar), amidopyrine (introduced under the proprietary name Pyramidon), an alkaloidal substance identified as caffeine, and an acid-insoluble substance resembling talc. Acetylsalicylic acid, barbital and its derivatives, emodin-bearing drugs, phenolphthalein and salicylates were not found. The ash on ignition was 2.06 per cent.

"The pulverized product was subjected to a chloroform extraction:

Chloroform soluble extractives	77.5 per cent
Chloroform insoluble (by difference)	22.5 per cent

"The chloroform extractive, consisting of amidopyrine and caffeine, yielded the following:

Amidopyrine	77.0 per cent
Caffeine	23.0 per cent

"This is equivalent to 59.7 per cent amidopyrine, 17.8 per cent caffeine, and 22.5 per cent excipients, in the whole mixture. From the foregoing, it is concluded that each tablet of 'Seeqit' consists essentially of 0.24 Gm. (approximately 3¾ grains) of amidopyrine (Pyramidon) and 0.07 Gm. (approximately 1 grain) of caffeine, with excipients."

Here, then, we have a tablet containing approximately 3¾ grains of amidopyrine and 1 grain of caffeine. Laboratories JAQ Inc. sell 100 Seeqit tablets for $4.50. One can buy five-grain tablets of amidopyrine U. S. P. for less than

$1.50 a hundred. Certainly Seeqit will produce no effect that cannot be produced equally well by a plain tablet of amidopyrine U. S. P. The spectacle of physicians, in charge of the health of large industrial concerns, dispensing "patent medicines" at an exorbitant price, when the same drugs under their official names can be purchased at one-third the price and would answer the same purpose, is edifying neither from the viewpoint of scientific medicine nor from that of economics.

Correspondence

"THE MEDICAL EXAMINER SYSTEM"

To the Editor:—May I, through you, thank Dr. Harkness for calling my attention (THE JOURNAL, October 22) to the error attributing to Edward the Confessor the statutes quoted in my paper of August 20 dealing with the medical examiner system? We are both in error, since the statutes are those of Edward IV. I can only plead guilty to a failure to refurbish my English history in preparation for my paper. The error in relation to the *history* of the coroner system is the more serious since it is my hope that within a few years the coroner will become a purely historical personage in the United States.

Dr. Charles E. Norris, chief medical examiner in the city of New York, writes me that the medical examiner system obtains in New York State only in the five counties making up New York City (New York, the Bronx, Kings, Queens and Richmond), Erie County, where it has long been established, and Westchester County, where it was recently inaugurated. He also informs me that the state of New Jersey is permitting counties by option to institute the medical examiner system, Essex County (Newark) having recently taken advantage of the act.

I desire to express my hearty approval of your editorial, October 22, regarding medicolegal conditions in the United States, and the cure for the present unsatisfactory situation.

TIMOTHY LEARY, M.D., Boston.
Medical Examiner, Suffolk County, Massachusetts.

TREATMENT OF BRONCHIAL ASTHMA

To the Editor:—Through an error in the preparation of my paper, "Studies in the Treatment of Bronchial Asthma" (THE JOURNAL, September 17, p. 956), reference to Dr. Nathan S. Schiff's article, "Management of Allergic Phenomena" (*Ann. Clin. Med.* **5**:374 [Oct.] 1926), was omitted. It is with regret that this mistake has been made, as the writer is deeply indebted to Dr. Schiff for the use of some of the material in his paper.

H. B. WILMER, M.D., Germantown, Pa.

Mouth Hygiene.—During recent years, schools have been established for the training of teachers of mouth hygiene . . . generally designated as dental hygienists, and twenty states have passed laws providing for the issuance of licenses to those who have been so trained. The program of the dental hygienist should be incorporated into the program of health education. This program consists in the making of: 1. Classroom talks and stories intended to gain the interest of children of the various grades and acquaint them with the importance of the healthy mouth. 2. The actual examination of each child's mouth and the cleaning of the teeth, followed by a talk to gain the child's interest. The result of the examination is reported through proper channels to the family dentist or to a special dental clinic. 3. Instruction in use of the tooth brush, by which the children are trained in the actual care of the mouth. 4. A check-up at stated intervals of the child's home care.—Report Joint Health Committee, Health Education, p. 44.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

VIRTUES OF SAUERKRAUT JUICE

To the Editor:—Kindly let me know what medical virtues, if any, are possessed by sauerkraut juice. Perhaps you could also refer me to some statements regarding this product by medical authors. I seem to be unable to locate much information on the subject. M.D., Virginia.

ANSWER.—Like all products of fresh vegetables, sauerkraut juice contains vitamins, which, of course, would be of value in conditions of vitamin deficiency. Such, however, arise rarely in this country, and an excess of vitamins does not increase the vital processes and vital energy, as the name may unfortunately suggest. In other words, vitamins are not tonic in any sense of the word for a person who is taking a sufficiency of them in his ordinary daily food.

As a second ingredient of much fabled potency, sauerkraut juice is supposed to contain lactic acid bacilli; whether in sufficient numbers and viability to be of any real service, in cases of excessive intestinal putrefaction available information does not tell.

No real scientific study of the composition or the effect of this fluid on the human body, either sick or well, is at hand. All that its promoters can furnish in recommendation for it, and as a basis for exaggerated and bombastic claims, are extracts from the writings of medical authorities that in practically all instances refer to sauerkraut rather than to the canned juice.

PROMOTING EMESIS IN CHILDREN

To the Editor:—In a child, aged 2 or 3, what is the best way to produce emesis? Can apomorphine hydrochloride be given hypodermically to a child aged from 1 to 5 years with safety? Do not use my name. M.D., Nebraska.

ANSWER.—Gastric lavage with a stomach tube is the most desirable way. If a stomach tube is not available, tickling the back of the pharynx, after overfilling the stomach with lukewarm water, is a prompt and efficient means of evacuation, which may have to be repeated to be thorough.

Syrup of ipecac in teaspoonful doses, given with liberal quantities of lukewarm water every ten minutes, is the emetic of choice in childhood. If it does not act promptly enough, the effect should be brought on by irritation of the pharynx.

Apomorphine hydrochloride may be given hypodermically to infants and children in the following dosage (Schlossman):

For children aged under 2 years	from 0.0008	to 0.0015	Gm.
From 2 to 10 years	from 0.002	to 0.005	Gm.
Over 10 years	from 0.005	to 0.010	Gm.

Many pediatricians advise against using it in children owing to the depressing tendency of the agent.

USE OF EPINEPHRINE—VAGUS SECTION IN ASTHMA

To the Editor:—I have a patient, aged 33, who has had bronchial asthma for twenty-six years. She cannot take iodides, atropine, ephedrine or morphine. Epinephrine is the only drug that gives her relief and does not cause severe and variable systemic symptoms. She has been taking from 1 to 4 cc. hypodermically every day for over a year. Is it justifiable, in this case, to section the right vagus below the recurrent laryngeal nerve? What is the ultimate effect of long and continuous use of epinephrine? Please use initials only. M.D., Texas.

ANSWER.—Vagus section is not sufficiently well established as a cure for asthma to be recommended, except as a last resort. One might fear that epinephrine would cause excessive wear of the circulatory apparatus; perhaps producing atheromatous changes in the aorta. Watching the blood pressure and making occasional orthodiagraphic records of the heart and the aorta might at least enable one to discover such changes before they have become extreme. The objection is, however, theoretical rather than practical, because it would be worse wear and tear to lungs as well as to circulatory apparatus to permit the patient to suffer the asthmatic attacks unrelieved. There is such a thing as a spasm habit, and this might become worse and more confirmed if relief were not given. It might, on the other hand, be possible to reduce the dose of the epinephrine solution so that, as in some instances

recorded, as small a dose as from 0.1 to 0.3 cc. of the epinephrine solution would be found sufficient. Solution of Pituitary, U. S. P., might be tried as a change from or in connection with the epinephrine.

FORMULA RA-3

To the Editor:—Have you any data available concerning "Formula RA-3", made by the American Chemical Company, Pittsburgh, Pennsylvania? Please omit name. M.D., Pennsylvania.

To the Editor:—Recently I have seen quite a few patients who are taking the preparation called "Formula RA-3", and described as a food which replaces those substances that have been lost in cooking. The preparation costs $10 for about 8 ounces. Have you any information regarding it? R. N. BOWMAN, M.D., Pittsburgh.

ANSWER.—"RA-3" is a rather obvious piece of quackery. In February, 1926, John R. Willis, director of the concern that puts out RA-3, described the product thus:

"A newly discovered, absolutely harmless, fully guaranteed, therapeutic preparation which contains minute quantities of Radium tested by the United States Bureau of Standards at Washington. It is these minute quantities of Radium, together with important other ingredients, combined in Formula RA-3 which medical science has discovered has a peculiar power of clearing the brain, toning up the entire system, nerves, muscles, organs, bringing about a healthy buoyance and vigor that makes you feel like a new man."

In July, 1926, Mr. Willis described the product thus:

"Formula RA-3 is a therapeutic preparation containing all the important constituents of the outsides of the grains and vegetables (these are discarded in the processes of preparation of our foods, although they are absolutely essential to health). Formula RA-3 is prepared under the most scientific conditions possible. It is put up in eight ounce bottles and one bottle will last for thirty-two days."

Whether both of these statements were correct at the time they were made or neither was correct, we do not know. Neither do we know what claims are made for RA-3 in October, 1927.

PHENOBARBITAL (LUMINAL)—ALLONAL—SODIUM IODIDE

To the Editor:—1. What is the difference between luminal and the sedative used in allonal? 2. Which is the more injurious when used over a long period of time? 3. Is either "habit forming" or injurious to the kidneys? 4. Are there any bad effects from the use of luminal in one-half grain doses over a long period of time? 5. Can sodium iodide be used safely in chronic arthritis by the intravenous method if the patient had chronic pulmonary tuberculosis? If published, please omit my name and initials. M.D., Utah.

ANSWER.—1. Phenobarbital (luminal) is phenyl-ethyl-barbituric acid, while the barbituric acid derivative in allonal is allyl-isopropylbarbituric acid. This is mixed with amidopyrine in the proportion of about 1 to 2. Phenobarbital is probably the more powerful sedative.

2. There are apparently no data for comparison.

3. All the agents of this series are somewhat habit forming, but not in the sense of morphine or cocaine craving. There are no abstinence symptoms. The kidneys are not markedly affected by these agents, though nephritis is considered a contraindication to them.

4. Generally none.

5. Probably not.

ANODYNES AND ANALGESICS

To the Editor:—Please give me some advice regarding the control of pain in conditions in which opiates cannot be exhibited. For instance, what agents would be most effective in a Dietl's crisis or a gallstone colic in a patient who gets an alarming urticaria from minute doses of morphine, or in a morphine addict who states that he can take 6 and 8 grains at a dose three or four times daily, or 12 grains as a single dose without effect on his respiratory rate? What class of substances in the materia medica or among modern synthetics most nearly approaches the opium derivatives in their anodyne qualities? Please omit name. M.D., Missouri.

ANSWER.—The coal-tar anodynes, more commonly but less appropriately called coal-tar antipyretics, have relegated the opiates to a secondary place, as they relieve many varieties of pain for which opiates formerly had to be used. Of the coal-tar anodynes, amidopyrine (pyramidon) has probably the highest analgesic value as compared with toxicity. Still, even it cannot compare in analgesic power with morphine in severely painful conditions such as those mentioned. Combination with other agents, most especially phenobarbital, increases the analgesic power to a considerable degree. In colics, antispasmodic agents, such as those of the atropine series, may be added with advantage. Codeine, though moderately analgesic when given by itself, also seems to increase the efficiency of amidopyrine in the treatment of pain.

The following prescription may illustrate a manner of prescribing a combination of these agents:

℞	Extract of hyoscyamus	0.15
	Codeine phosphate	0.30
	Phenobarbital	0.30
	Amidopyrine	3.00

Mix and divide into fifteen capsules.
Label: One every hour until relieved or until three are taken; then every two to four hours as required.

It is not always necessary to use all four ingredients; but, by some such combination, it is frequently possible to secure relief from pain in the conditions mentioned without having to take recourse to the use of morphine.

AUTO-HEMIC THERAPY

To the Editor:—I am enclosing an amusing pamphlet put out by a Dr. L. D. Rogers of your city. It is full of testimonials and ends up with a letter from Dr. Charles Donley Miller of Carthage, New York, Fellow of the A. M. A., member of his state society, and a specialist in surgery. Why not ask the Fellows of the A. M. A., who engage in such testimonial letter writing, to stop it or cease functioning as members or Fellows? Please omit name. M.D., Pennsylvania.

ANSWER.—The "Auto-Hemic Therapy" of L. D. Rogers was dealt with at some length in THE JOURNAL of Feb. 14, 1920, and the matter is reprinted in the pamphlet "Some Quasi-Medical Institutions." For many years Rogers was the head and chief owner of a low-grade school of the "sun-down" variety that for some time before it went out of existence was not recognized either by the state in which it operated or by the examining boards of the majority of the other states of the Union. Dr. Rogers is, or was, if he is not still, "Permanent Secretary" of the "National Association of Panpathic Physicians"—whatever that may be. Some years ago, when Rogers was exploiting a cancer serum, there was founded the "American Cancer Research Society," with L. D. Rogers as "president." Rogers' name also appeared on the "faculty list" of the "American Post-Graduate School," which granted a long line of sonorous degrees and ornate diplomas—by mail. In 1915, Rogers was exploiting the "New Japanese Treatment for Tuberculosis" and advertising in the classified columns of newspapers. Then came the "Auto-Hemic Serum," with its inevitable "National Society of Auto-Hemic Practitioners." According to Rogers, Auto-Hemic Therapy "consists in giving the patient a solution made by attenuating, hemolizing, incubating and potentizing a few drops of his or her own blood, and administering it according to a refined technic developed by" L. D. Rogers. Those interested can, by sending Rogers "$100 cash in advance," get a mail-order course on this marvel.

EFFECTS OF ARSENOUS OXIDE ON THE SKIN

To the Editor:—What are the deleterious effects, if any, on the skin of solutions, hot or cold, of arsenous oxide? The highest concentration of the arsenous oxide will probably be 5 grains per gallon or 2 pounds per 3,000 gallons. ISAAC D. RAWLINGS, M.D., Springfield, Ill.

ANSWER.—Industrial exposure to arsenic in any form is less hazardous when the arsenic is in solution than when arsenic dusts or arsenic vapors are present. Under the conditions mentioned, the hazard is considerable if the solution is to be used for spraying, or for a dip or in any process that may lead to concentration through drying on the skin or clothing. The person making up these solutions, and thus necessarily handling the white arsenic (arsenous oxide) as a powder will be exposed to a definite hazard. Any person whose skin is sensitive to arsenic from previous exposure will react to the minimal concentrations mentioned. A few persons possess such an idiosyncrasy to arsenic as to respond to any exposure.

Apart from the exceptional circumstances just mentioned, the hazard from solutions of arsenous oxide in strengths of only 2 grains to the gallon of water is small. Hamilton cites one instance in which repeatedly a person's hands were exposed to a solution of arsenous oxide in the strength of 1 pound to the gallon of water, without bad effect.

The mildest form of skin abnormality from the action of arsenous oxide is unusual sweating of the palms of the hands, trophic changes in the nails, followed by the loss of hair on the exposed parts or generally. Later the skin may become

scaly and present a diffuse brown or grayish pigmentation. Up to this point the degree of arsenic poisoning (without other manifestations) is not alarming and thus permits of the removal of any person so involved from exposure. In the event of a continuous exposure to these low concentrations of arsenous oxide solutions, it is well to change all workers at yearly intervals, even though no manifestations are in evidence.

TREATMENT OF BURNS—LEGAL RESPONSIBILITY FOR ERROR IN PRESCRIPTION

To the Editor:—1. What effect would a mixture of ammonia water and linseed oil have on a burn? 2. What defense would a druggist have in a suit by one of his customers if hartshorn liniment was given on a prescription over the telephone by a physician in place of carron oil?

M.D., Chicago.

ANSWER.—1. It would irritate. It might favor blistering, thus possibly converting a burn of first degree into one of second degree.

2. The most obvious defense would be that the blunder was made by the physician, who actually telephoned for hartshorn liniment, either absent mindedly or because he believed that hartshorn liniment (Ammonia Liniment, N. F.) and carron oil (Lime Liniment, U. S. P.) were the same preparation. The druggist might defend on the ground of contributory negligence, since hartshorn liniment is so widely known and easily recognized that the patient or his agent who applied the liniment might be expected to recognize it, and, knowing its properties, to refrain from applying it to a burn, which is about the only condition for which carron oil could have been prescribed. A defense of contributory negligence would receive added force if the druggist affixed the proper label to the package. It would have great weight if the person who applied the hartshorn liniment to the burn should be produced as a witness to verify the testimony of the physician that he had ordered carron oil and if the container was plainly labeled "hartshorn liniment." Something might depend on the place where the transaction occurred, which is not stated by our correspondent.

GLYCERIN TREATMENT FOR FLUID IN KNEE JOINT

To the Editor:—Is there any therapeutic basis for the application of cold glycerin to an injured knee for the removal of fluid from the joint?

E. E. CARL, M.D., Beaver Dam, Wis.

ANSWER.—None. Concentrated glycerin does abstract water, but this action is largely prevented by the skin. Glycerin is frequently used diluted two or three times to soften the skin and to prevent chapping. On a raw surface it first produces a smarting sensation because of the abstraction of water, but later it is soothing and it gives protection.

TREATMENT OF CEREBRAL HEMORRHAGE WITH HEMIPLEGIA

To the Editor:—I would appreciate any literature about the treatment of cerebral hemorrhage with hemiplegia. The patient in question has a high blood pressure (systolic, 210; diastolic, 100) and one positive albumin in urine; otherwise the observations are negative. The patient is a woman, aged 45, has had ten children, and has worked hard all her life. She has now recovered almost entirely, except for some weakness in her upper extremity. I have been using small doses of potassium iodide and am about to begin to use some sodium nitrite. In the literature I have been able to find very little treatment in such cases. M.D., Cleveland.

ANSWER.—In the case described, it must be realized that the cerebral hemorrhage was only a symptom of some cardiovascular disturbance, the nature of which is not clear from the details given. The hemorrhage has occurred and cannot be removed; the principal indications are for measures directed toward preventing further cerebral insults; that is to say, toward minimizing the strains to which the cardiovascular system is subjected. Discussions of this subject will be found under the head of hypertension in its various forms in any good textbook of medicine; the fact that a cerebral hemorrhage has already occurred does not alter the indications except to emphasize the needs. In this prophylactic treatment, drugs, as a rule, have little part; the principal elements are those of general hygiene with careful regulation of diet, exercise and mode of life. In this connection it may be pointed out that the nitrites have only a transient effect and are rarely indicated as remedies to be administered regularly. The only feature belonging to the cerebral hemorrhage that might call for special consideration is the resulting hemiplegia. Massage, baths and graduated exercise will often help to ameliorate this and should be persevered with.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ALABAMA: Montgomery, Jan. 10-13. Sec., Dr. S. W. Welch, 519 Dexter Ave., Montgomery.

COLORADO: Denver, Jan. 3. Sec., Dr. Philip Work, 324 Metropolitan Bldg., Denver.

DELAWARE: Wilmington, Dec. 13-15. Sec., Reg. Bd., Dr. Henry W. Briggs, Wilmington. Sec., Homeo. Bd., Dr. Henry W. Briggs.

DISTRICT OF COLUMBIA: Washington, Jan. 10. Sec., Dr. E. P. Copeland, 1801 Eye St., Washington.

HAWAII: Honolulu, Jan. 10-13. Sec., Dr. James A. Morgan, Young Bldg., Honolulu.

ILLINOIS: Chicago, Jan. 10-12. Supt., Mr. V. C. Michels, Springfield.

KENTUCKY: Louisville, Dec. 6. Sec., Dr. A. T. McCormack, 532 W. Main St., Louisville.

LOUISIANA: New Orleans, Dec. 8-10. Sec., Dr. Roy B. Harrison, 1507 Hibernia Bldg., New Orleans.

MARYLAND: Baltimore, Dec. 13-16. Sec., Dr. Henry M. Fitzhugh, Baltimore. Sec., Homeo. Bd., Dr. J. S. Garrison, Baltimore.

MINNESOTA: Minneapolis, Jan. 17-19. Sec., Reg. Bd., Dr. A. E. Comstock, 636 Lowry Bldg., St. Paul. Basic Science Bd., Jan. 3. Sec., Dr. E. T. Bell, U. of Minnesota.

NEW YORK: Albany, Buffalo, New York and Syracuse, Jan. 24-27. Sec., Dr. H. Rypins, Education Bldg., Albany.

NORTH CAROLINA: Greensboro, Dec. 1. Sec., Dr. John W. MacConnell, Davidson.

NORTH DAKOTA: Grand Forks, Jan. 3-6. Sec., Dr. G. M. Williamson, Grand Forks.

OHIO: Columbus, Dec. 7-9. Sec., Dr. H. M. Platter, Columbus.

OREGON: Portland, Jan. 3-5. Sec., Dr. M. K. Hall, 816 Pittick Bldg., Portland.

RHODE ISLAND: Providence, Jan. 5-6. Sec., Dr. B. U. Richards, State House, Providence.

SOUTH DAKOTA: Pierre, Jan. 17. Sec., Dr. H. R. Kenaston, Bonesteel.

VIRGINIA: Richmond, Dec. 6-9. Sec., Dr. J. W. Preston, Roanoke.

WASHINGTON: Seattle, Jan. 16. Dir., Reg. Bd., Mr. Chas. R. Maybury, Olympia. Dir., Basic Science Bd., Mr. Chas. R. Maybury, Olympia.

WISCONSIN: Madison, Jan. 10-12. Sec., Reg. Bd., Dr. R. E. Flynn, 315 State Bank Bldg., La Crosse. Sec., Basic Science Board, Prof. M. F. Guyer, U. of Wisconsin.

Indiana Reciprocity Report

Dr. E. M. Shanklin, secretary of the Indiana State Board of Medical Registration and Examination, reports that 24 candidates were licensed by reciprocity from Jan. 1 to Oct. 1, 1927. The following colleges were represented:

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Georgetown University School of Medicine		(1899)	Iowa
Northwestern University Medical School		(1924)	Illinois
Rush Medical College	(1916), (1926) Illinois; (1927) Colorado	(1924)	Wisconsin
University of Illinois College of Medicine		(1912)	Illinois
University of Kansas School of Medicine		(1926)	Kansas
University of Maryland School of Medicine and the College of Physicians and Surgeons		(1904)	Indiana
Boston University School of Medicine		(1916)	Virginia
University of Michigan Medical School		(1926)	Michigan
St. Louis University School of Med.	(1919) Iowa,	(1925)	Ohio
Washington University School of Medicine		(1925)	Kansas
University of Nebraska College of Medicine	(1925), (1926)		Nebraska
Columbia University College of Phys. and Surgs.		(1926)	New York
Starling Medical College, Columbus		(1891)	Illinois
University of Cincinnati College of Medicine	(1924), (1927)		Ohio
Jefferson Medical College of Philadelphia		(1923)	Colorado
University of Pennsylvania School of Medicine		(1898)	New York
Medical College of the State of South Carolina		(1914)	S. Carolina
University of Toronto Faculty of Medicine		(1921)	Michigan

Wisconsin June Examination

Dr. Robert E. Flynn, secretary of the Wisconsin State Board of Medical Examiners, reports the written and practical examination held at Milwaukee, June 28-30, 1927. The examination covered 18 subjects and included 100 questions. An average of 75 per cent was required to pass. Sixteen candidates were examined all of whom passed. Twenty-five candidates were licensed by reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Number Passed
Northwestern University Medical School		(1927)	2
Rush Medical College		(1927)	2
University of Illinois College of Medicine	(1926), (1927, 2)		3
Johns Hopkins University School of Medicine		(1926)	1
University of Michigan Medical School		(1926)	1
Washington University School of Medicine		(1924)	1
University of Cincinnati College of Medicine		(1927)	1
Marquette University School of Medicine		(1927)*	1

McGill University Faculty of Medicine	(1923)	1
University of Toronto Faculty of Medicine	(1926)	1
University of Vienna, Austria	(1919)†	1
German University of Prague, Czechoslovakia	(1925)	1

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Georgia Medical Department		(1925)	Georgia
Loyola University School of Medicine		(1918)	Illinois
Rush Medical College		(1916), (1920), (1925), (1927, 4)	Illinois
University of Illinois College of Medicine		(1901), (1923)	Illinois
Indiana University School of Medicine		(1926)	Indiana
State University of Iowa College of Medicine		(1920)	Iowa
Tufts College Medical School		(1925)	Maine
Univ. of Minnesota Med. School		(1922), (1926, 2), (1927)	Minnesota
Washington University School of Medicine		(1921)	N. Carolina
	(1924, 2)		Missouri
St. Louis University School of Medicine		(1924)	Missouri
Albany Medical College		(1910)	Mass.
Ohio State University College of Medicine		(1911)	Ohio
Vanderbilt University School of Medicine		(1926)	Tennessee

* This candidate has finished his medical course and will receive his M.D. degree on completion of one year's internship in a hospital.
† Graduation not verified.

Book Notices

DISEASES OF THE NEWBORN. A Textbook for Students and Practitioners. By James Burnet, M.A., M.D., F.R.C.P., Lecturer on Diseases of Children, School of Medicine of the Royal Colleges, Edinburgh. Cloth. Price, $1.85. Pp. 275. London: Oxford University Press, 1927.

Within recent years much of the pediatrician's interest has been turned toward the study of the diseases that occur in the infant during the first month of life. It has been realized that infant mortality is greatest during this period. There are many rare conditions that occur, and in general different pathologic conditions. A great mass of periodical literature may be perused by those who are especially interested in the new-born, but there has been no satisfactory textbook for the use of the student and general practitioner. To fill this need this book has been written. It is arranged in the conventional way: first, a discussion of the anatomy and physiology of the new-born; next, consideration of the diseases of the various systems. Each subject is treated under the heads of etiology, clinical features, prognosis and treatment. There are special chapters devoted to asphyxia neonatorum and the premature infant. The author has been thorough in the preparation of his material, touching on practically every condition that occurs in the new-born infant. Obviously the discussions cannot be detailed in a small book which covers such a wide field. The knowledge is given in an easily assimilable form. This book should go far in stimulating interest in the diseases of the new-born.

DER MESKALINRAUSCH. SEINE GESCHICHTE UND ERSCHEINUNGSWEISE. Von Privatdozent Dr. med. Kurt Beringer, Assistent an der psychiatrischen Klinik, Heidelberg. Paper. Price, 18 R. M. Pp. 315. Berlin: Julius Springer, 1927.

The author presents here a scientific study of peyote intoxication. He credits the introduction of this interesting intoxicant to the German pharmacologist L. Lewin, who in 1888 brought this Mexican drug, which is also known in commerce as "mescal buttons," to Europe, where it was identified as a species of *Anhalonium*, and in recognition of merit named *Anhalonium lewinii*. There seems little disposition in this country to grant this title. Coulter in 1894 proposed the name *"Lophophora williamsii,"* and considers *Anhalonium lewinii* merely a variety rather than a distinct species. Even though the credit of discovery of this cactus may not belong to the German pharmacologist, it is interesting that attention had not been paid by American scientists to this intoxicant used by the Mexican Indians until a European called attention to it.

The first mention of peyote is to be found in the writings of the priest Bernardino Sahagun, who entered Mexico in 1529, shortly after its conquest by Cortez. Since then it has been mentioned from time to time, among others by Francesco Hernandez, the court physician of Philip II, but most generally by the missionaries, who found the employment of the drug, in connection with the religious ceremonies of the Indians, so great an obstacle to their endeavors that one of them called it "devil's root." Some of the Mexican Indians used peyote as coca leaf is used in South America to help them endure extreme exertion and privation, as it is credited with removing hunger and thirst. It is likewise used as a panacea in the treatment of all kinds of disease. Its most remarkable employment, however, is as a means of inducing an alleged supernatural exaltation state among the men—women being excluded—as part of a religious rite. This custom prevailed also for a long time among five tribes of Indians living in the southwestern part of the United States. Since 1890, the use of this drug has spread almost like an epidemic among the North American Indians, until now it is practiced by at least thirty-four tribes. So extensive has the use of this intoxicant become that a bill was introduced into the United States Senate to prohibit the sale of peyote, but it was not passed. The Indians, who consider the power of having visions a property of "medicine men," for whom they have great reverence, find that by merely chewing a few of these "buttons" they may themselves be visited by most extraordinary visions, experiencing a sense of annihilation of time and space and of liberation of the spirit from the body of so remarkable a nature that they believe the drug to be a veritable incarnation of the deity. This forms the basis of the "peyote religion," in which the Indians seem to take a racial pride.

The active principles of this drug are four alkaloids, among which mescaline is the most important. This book is given over to a scientific study of the mental aberrations induced by the subcutaneous administration of 0.5 Gm. of mescaline sulphate in approximately sixty experiments. The description of the experiences under the influence of the drug makes interesting reading, and the author attempts to draw psychologic deductions from them. He finds that the condition induced is akin to "hashish," though different from it. Clinically, mescaline intoxication shows similarities to the acute phases of schizophrenia, and the idea is advanced that biochemical investigation may some day reveal the poison or poisons responsible for this form of insanity.

TASCHENBUCH DER PRAKTISCHE UNTERSUCHUNGSMETHODEN DER KÖRPERFLÜSSIGKEITEN BEI NERVEN- UND GEISTESKRANKHEITEN. Von Professor Dr. V. Kafka, Leiter der serologischen Abteilung der psychiatrischen Universitätsklinik u. Staatskrankenanstalt Friedrichsberg, in Hamburg. Third edition. Paper. Price, 6.60 marks. Pp. 114, with 42 illustrations. Berlin: Julius Springer, 1927.

This edition contains new material concerning examination of the plasma, cisterna puncture, p_H, albumin quotient, sugar and chloride determinations, and a new paraffin reaction. The handbook, which is condensed and complete, includes a concise practical description of all the tests in use in studies of the blood and spinal fluid in nervous and mental diseases. Description of the normal reactions are given as well as a summary of the results found in many diseases of the nervous system. No explanatory details concerning the theory of the reactions are to be found. In conclusion, the author states that the reactions of the body fluids are to be used only in conjunction with a careful clinical study, and he warns that too great importance should not be given to any single biologic reaction. The book is to be recommended to all laboratory workers.

DIE MORPHIN-ERKRANKUNGEN. Von Dr. Benno Hahn. Paper. Pp. 165. Heidelberg: Herbert Grossberger, 1927.

This small volume on morphinism is written from the clinical point of view. It goes with considerable detail into the clinical causes, means, symptoms, course and treatment of chronic morphinism. The fundamental pharmacology of the condition is not discussed in anything like a thorough manner, the reader being referred to such works as Heffter's Handbuch. Hahn gives a rather inclusive list and brief description of native and artificial opium alkaloids which is useful to one interested in this field. A useful but relatively brief bibliography is also given. Hahn divides the course of chronic morphinism into three stages: (1) the stage of induction or developing tolerance, (2) the stage of equilibrium and (3) the stage of intolerance. In the last, or third, stage the subject does not obtain the usual desired results, such as depression and euphoria, but is rendered more irritable. It is in this stage that he is forced to seek medical aid for his condition, since his drug no longer suffices in any dosage. Chronic morphinism is considered to consist of at

least two constituent factors, the pharmacodynamic and the mental, or psychic. A psychotic person may fall an easy victim to drug usage or may satisfy his mental incompleteness or insatiety in some other way. The pharmacodynamic factor is amenable to correction, whereas the psychosis is handled only with extreme difficulty.

THE ARTIFICIAL LIGHT TREATMENT OF CHILDREN IN RICKETS, ANAEMIA AND MALNUTRITION. By Katherine M. L. Gamgee, M.R.C.S., L.R.C.P., D.P.H. With an introduction by Professor Leonard Hill, M.B., F.R.S., Director of the Department of Applied Physiology and Hygiene, National Institute for Medical Research. Cloth. Price, $4. Pp. 172, with illustrations. New York: Paul B. Hoeber, Inc., 1927.

This is an excellent little book on the artificial light treatment of children with rickets. While it does not contain new material, it gives most of the available data of our present knowledge of the relation of light to rickets. About thirty pages are devoted to a description of the workings of a light clinic as used in England in public health work. This portion of the book would have probably only a news interest to American physicians.

L'ÉTAT ACTUEL DE L'ÉTUDE DES RÉFLEXES. Par M. Minkowski, professeur à l'Université de Zurich. Traduit de l'allemand par le Dr. Henri E. Y., interne des Asiles de la Seine. Paper. Price, 12 francs. Pp. 75. Paris: Masson & Cie, 1927.

The author of this little brochure has been engaged for some time in the study of the development of reflexes. His original work has been mainly concerned with the earliest reflexes found in embryos obtained by cesarean section. He goes into detail concerning the changing types of reflexes, the conditional and the visceral reflexes, relationship between reflexes and instincts, and the dissolution of reflexes. The literature is thoroughly reviewed and a large bibliography is appended. The book is of great value to psychologists and neurologists as a summary of the most recent work in reflexes.

Books Received

Books received are acknowledged in this column, and such acknowledgment must be regarded as a sufficient return for the courtesy of the sender. Selections will be made for more extensive review in the interests of our readers and as space permits. Books listed in this department are not available for lending. Any information concerning them will be supplied on request.

THE SCIENCE AND PRACTICE OF SURGERY. Volume I: General Surgery. Volume II: Regional Surgery. By W. H. C. Romanis, M.A., M.B., M.Ch., Senior Surgeon in Charge of Out-Patients, St. Thomas's Hospital, and Philip H. Mitchiner, M.D., M.S., F.R.C.S., Surgeon in Charge of Out-Patients, St. Thomas's Hospital. Cloth. Price, $12 per set. Pp. 795, with 330 illustrations, and pp. 955, with 290 illustrations. New York: William Wood & Company, 1927.

Another British collection of principles and practice in a field much overpopulated with literature.

CULTIVATING THE CHILD'S APPETITE. By Charles Anderson Aldrich, M.D., Associate Attending Physician, Children's Memorial Hospital, Chicago. With a foreword by Clifford G. Grulee, M.D., Professor of Pediatrics, Rush Medical College. Cloth. Price, $1.60. Pp. 127. New York: Macmillan Company, 1927.

Elementary consideration of the physiology of hunger and appetite and application to care of the child.

DAS ZWERCHFELL IM GESUNDEN UND KRANKEN ZUSTAND. Von Privatdozent Dr. Karl Hitzenberger, Assistent der I. medizinischen Universitätsklinik in Wien. Paper. Price, 18 marks. Pp. 206, with 130 illustrations. Vienna: Julius Springer, 1927.

Monographic study of the diaphragm illustrated with many roentgen-ray plates.

AFFECTIONS OF THE STOMACH. By Burrill B. Crohn, M.D., Associate Attending Physician to the Mt. Sinai Hospital, New York City. Cloth. Price, $10 net. Pp. 902, with 361 illustrations. Philadelphia: W. B. Saunders Company, 1927.

Complete study of the stomach in health and disease based largely on author's personal clinical experience.

NERVE TRACTS OF THE BRAIN AND CORD. Anatomy: Physiology: Applied Neurology. By William Keiller, F.R.C.S., Professor of Anatomy and Applied Anatomy, University of Texas. Cloth. Price, $8. Pp. 456, with illustrations. New York: Macmillan Company, 1927.

Beautifully prepared volume on the courses and functions of nerve tracts.

REBUILDING THE CHILD. A Study in Malnutrition. By Frank Howard Richardson, A.B., M.D., F.A.C.P. With an introduction by William R. P. Emerson, A.B., M.D., Professor of Pediatrics, Tufts College Medical School. Cloth. Price, $2. Pp. 319, with 43 illustrations. New York: G. P. Putnam's Son, 1927.

Essays emphasizing importance of proper nutrition for adequate growth.

THE BANANA: Its History, Cultivation and Place Among Staple Foods. By Philip Keep Reynolds. Cloth. Price, $2. Pp. 179, with illustrations. Boston: Houghton Mifflin Company, 1927.

Scientific information about a fruit coming into increasing favor and flavor.

THE SHIP SAILS ON. By Nordahl Grieg. Translated from the Norwegian by A. G. Chater. Cloth. Price, $2.50. Pp. 219. New York: Alfred A. Knopf, 1927.

Stark novel of the effects of venereal disease on a Norwegian sailor.

THE OPHTHALMIC YEAR BOOK. Volume XXIII Containing Bibliographies, Digests and Indexes of the Literature of Ophthalmology for the Year 1926. Edited by William H. Crisp and others. Cloth. Pp. 338. Chicago: Ophthalmic Publishing Company, 1927.

The collected literature of ophthalmology.

RECENT PROGRESS IN THE PREVENTION AND TREATMENT OF SCARLATINA, MEASLES AND DIPHTHERIA. By Elliott S. Robinson, M.D. Fiske Fund Prize Essay No. LXII. Cloth. Pp. 61. Providence, 1926.

Résumé of knowledge to date of publication with conclusions.

MIKROMETHODEN ZUR BLUTUNTERSUCHUNG. Von Ivar Bang. Sixth edition edited by Dr. med. Gunnar Blix. Paper. Price, 4.20 marks. Pp. 54, with 7 illustrations. Munich: J. F. Bergmann, 1927.

Details of technic profusely elaborated.

EARLY MEDICINE IN MARYLAND. By Thomas S. Cullen. Boards. Pp. 15, with 7 illustrations. Baltimore, 1927.

Monograph on early Maryland medicos with portraits and detailed information.

DIE CHIRURGIE. Eine zusammenfassende Darstellung der allgemeinen und der speziellen Chirurgie. Herausgegeben von Prof. Dr. M. Kirschner, und Prof. Dr. O. Nordmann. Lieferung 18. Band II. Teil 2. Die Chirurgie der Lunge. Von Prof. Dr. A. W. Meyer. Fremdkörper in den Luftwegen. Von Priv.-Doz. Dr. H. Frenzel. Die Tracheo-Bronchoskopie. Von Priv.-Doz. Dr. H. Frenzel. Die Chirurgie der Pleura. Von Prof. Dr. F. Landois. Die Chirurgie des Zwerchfells und des Nervus phrenicus. Von Prof. Dr. F. Landois. Paper. Price, 21 marks. Pp. 275-548, with 147 illustrations. Berlin: Urban & Schwarzenberg, 1927.

DIE CHIRURGIE: Eine zusammenfassende Darstellung der allgemeinen und der speziellen Chirurgie. Herausgegeben von Prof. Dr. M. Kirschner, und Prof. Dr. O. Nordmann. Band V. Lieferung 16. Die Chirurgie des Darmes. Von Prof. Dr. O. Kleinschmidt und Prof. Dr. J. Hohlbaum. Ueber Eingeweidesenkung. Von Geh. Med.-Rat. Prof. Dr. E. Payr. Paper. Price, 24 marks. Pp. 845-1240, with 106 illustrations. Berlin: Urban & Schwarzenberg, 1927.

FEDERAL AND STATE LAWS RELATING TO WEIGHTS AND MEASURES. Department of Commerce. Bureau of Standards. Miscellaneous Publication No. 20. Third edition revised by William Parry, Bureau of Standards, under the direction of F. S. Holbrook, Cochief, Division of Weights and Measures, Bureau of Standards. August, 1926. Cloth. Price, $2.50. Pp. 976. Washington: Government Printing Office, 1926.

DIE CHIRURGIE: Eine zusammenfassende Darstellung der allgemeinen und speziellen Chirurgie. Herausgegeben von Prof. Dr. M. Kirschner, und Prof. Dr. O. Nordmann. Band II. Lieferung 17. Die Geschwülste. Von Prof. Dr. H. Coenen. Die Chirurgie der parasitären Erkrankungen. Von Prof. Dr. G. Hosemann. Paper. Price, 20 marks. Pp. 391, with 214 illustrations. Berlin: Urban & Schwarzenberg, 1927.

ANNUAL REPORT OF THE BOARD OF REGENTS OF THE SMITHSONIAN INSTITUTION SHOWING THE OPERATIONS, EXPENDITURES AND CONDITION OF THE INSTITUTION FOR THE YEAR ENDING JUNE 30, 1926. Cloth. Pp. 551, with illustrations. Washington, D. C.: Government Printing Office, 1927.

HANDBUCH DER GESAMTEN STRAHLENHEILKUNDE, BIOLOGIE, PATHOLOGIE UND THERAPIE. Band I. Lieferung 1. Herausgegeben von Prof. Dr. Paul Lazarus. Paper. Price, 16.50 marks. Pp. 166, with 25 illustrations. Munich: J. F. Bergmann, 1927.

FOURTH REPORT OF THE GOVERNMENT INSTITUTE FOR VETERINARY RESEARCH. By Takizo Mochizuki, Director. Paper. Pp. 67. Fusan, Chosen, Japan: Government Institute for Veterinary Research, 1927.

GESUNDHEITSKALENDER, 1928. Herausgegeben von Dr. Med. Otto Neustätter. Vierter Jahrgang. Paper. Pp. 81, with illustrations. Munich: Gesundheitswacht Verlags-Gesellschaft, 1927.

TRANSACTIONS OF THE MEDICAL ASSOCIATION OF THE STATE OF ALABAMA, 1927. Sixtieth Annual Session. Cloth. Pp. 555. Montgomery, 1927.

Medicolegal

No Claim Against Corporation that Acquired Hospital

(Rodgers v. Lincoln Hospital et al. (Mich.), 214 N. W. R. 88)

The Supreme Court of Michigan says that a voluntary association of physicians acquired, under a land contract, a sanatorium property which they used for a hospital for operating on and caring for their own patients. A year later a corporation, called the Lincoln Hospital, was organized, under the state law, and purchased the property of the association, the land contract being assigned to the corporation. While the hospital was conducted by the association and the plaintiff was a patient in the hospital she suffered injuries alleged to be due to the negligent operation of an elevator not provided with proper safety appliances. A little less than two years after the accident she sued the hospital corporation for damages. There was no proof that the defendant expressly assumed the liabilities of the association. The question of implied assumption was submitted to the jury, who found for the plaintiff in the sum of $2,000. But the judgment entered is vacated and the trial court directed to enter judgment for the defendant, the defendant to have costs.

The association was, in legal effect, a partnership composed of those who had contributed to it. The plaintiff might have brought action against them and the issue as to liability been therein determined. The record was barren of any testimony tending to show that the members of the association knew, or had reason to believe, that the plaintiff would seek to recover damages for the injury which she had sustained while in the hospital. The association was not insolvent at the time of the sale. It was not seeking to avoid payment to the plaintiff or any other creditor by disposing of its property to the defendant. Several members of the association had become dissatisfied, and dissolution was talked about. Then a physician who had been the active member of the association conceived the idea of organizing a corporation to take over its property, in which the rights of its stockholders would become fixed, and whose existence could not be terminated at the will of one or more dissatisfied persons owning an interest therein. He induced several physicians who had not been members of the association to become stockholders, and, on the organization of the corporation and the transfer to it of the property of the association, the members who did not become incorporators were paid in full for their interest therein. There was nothing secret about the transaction, nor any purpose to defeat the creditors of the association. All of its known debts were paid in full. There was no claim that the individuals were not financially responsible. The defendant's motion for judgment notwithstanding the verdict should have been granted.

Medical and Surgical Aid for Injured Employees

(Allen v. Elk City Cotton Oil Co. et al. (Okla.), 256 Pac. R. 898)

The Supreme Court of Oklahoma holds that, under section 7288 of the compiled statutes of that state of 1921, it is incumbent on an employer to provide medical and surgical aid properly, and the employer is liable for all legitimate consequences following an accident, including unskilfulness or error of judgment of the physician furnished as required, and the employee is entitled to recover under the schedule of compensation for the extent of his disability, based on the ultimate result of the accident, regardless of the fact that the same has been aggravated and increased by the intervening negligence or carelessness of the employer's selected physician. The provision of section 7290 that eight weeks' compensation and cost of operation should be allowed for an injury resulting in a hernia presupposes that prompt medical attention in the nature of the necessary operation will be given, and, where such necessary operation, or the tender thereof, is long and unnecessarily delayed, the employer will be held liable for compensation during such delay, where continued disability results from such hernia. The responsibility resting on the employer to cause to be performed the necessary operation to cure a hernia resulting from an injury received in the course of employment by the employee can be relieved only by the tender of such operation to the employee and his refusal to accept the same.

In this case an employee sustained, through an accident on March 16, 1924, various injuries, including hernias of the right and left sides. The state industrial commission reached the conclusion that he was not entitled to compensation for temporary total disability beyond May 1, 1924, but was entitled to eight weeks' compensation for the hernias, and in addition ordered that he be tendered an operation for the hernias, the expense incident to the operation to be paid by the employer and the insurance carrier. But no operation and hospital service incident to the hernias, to cure them at the expense of the employer, was ever tendered up to the time of the award of the commission, July 10, 1926. This court is unable to distinguish between a continued disability due to improper surgical treatment and a continued disability due to a failure to render proper surgical treatment as in the instant case. It therefore holds that the employer was liable for, and should pay, all hospital and medical fees rendered to the employee claimant prior to May 1, 1924, and should pay to him compensation at the rate fixed by the commission of $11.54 a week from March 16, 1924, until such time as a successful operation shall have been performed, and for eight weeks thereafter, or until such time as such operation shall have been tendered by the employer, and by the claimant refused, in which event compensation shall cease at the expiration of the eight weeks after such tender, credit to be given for any compensation already paid.

Under the workmen's compensation law an employer cannot be held liable for the payment for medical services rendered the employee by physicians other than the one selected by the employer wherein the treatment extended to the claimant is for an ailment other than that resulting from the injury received by the employee arising out of and in the course of his employment.

Michigan Law Against Ambulance-Chasers Held Valid

(Kelley v. Boyne (Mich.), 214 N. W. R. 316)

The Supreme Court of Michigan holds constitutional Act No. 280 of the public acts of that state of 1925, entitled "An act to prohibit the soliciting of personal injury claims and making illegal the solicitation thereof and providing a penalty for the violation of this act." The court says that the brief of the prosecuting attorney was largely devoted to a discussion of the proposition that as a matter of common knowledge and legislative cognizance solicitors for personal injury claims constitute a needless and iniquitous class of intruders acting as runners up for attorneys who specialize in personal injury cases on a percentage basis, saying in part:

"Every city and every locality has its 'personal injury' lawyers, and very often these are surrounded with their solicitors, henchmen, and 'ambulance-chasers.' The resultant exploitation of the unfortunate, in all its shocking, not to say revolting, details, is well known, at least to the legal profession, and widely known by the general public."

Evidently "ambulance-chaser" is a recognized colloquial word of our English vocabulary. It is said to have originally been applied to the unseemly activities of overzealous undertakers in too promptly soliciting contracts in their line of business; but in later years as personal injury litigation increased, and ethical restrictions on the legal profession decreased, that sinister compound word appears to have assumed in popular usage the following meaning, as defined by some lexicographers:

"A person, either a lawyer or the agent of a lawyer, who follows up cases of accident in the streets and tries to induce the injured person to bring suit for damages."—Century Dictionary and Cyclopedia.

It can be fairly said there is a quantum of common knowledge that such activities have not been altogether uncommon in recent years; and also with some degree of assurance that the asserted laxity in professional ethics claimed to justify the uncomplimentary epithet used by counsel was accentuated by, if not largely the result of, legislation which in effect abolished champerty and maintenance, and validated con-

tracts between prospective plaintiffs and their attorneys, by which the latter are at liberty to take cases for a contingent fee on a percentage basis; thereby becoming in effect partners or joint adventurers, and indirectly coplaintiffs with their clients in such litigation, at the same time professionally of record in, and trying the cases as attorneys and officers of, the court.

It was urged for the defendant with some plausibility that the definition of "ambulance-chaser" should be enlarged to include certain overzealous claim agents and adjusters of those responsible, or contingently liable, for a tort resulting in personal injury. There is, however, the marked distinction that they are employees and representatives of those charged with the tort, sent to the injured person for the purpose of an amicable adjustment if possible, not intruding outsiders whose only mission and interest is to solicit and secure employment by representing the injured party in handling his claim. Unfair settlements obtained by the tort-feasor (wrongdoer) through trickery, misrepresentation, or fraud have been, and would be, held void and worthless. If parties themselves are unable to make a fair and satisfactory settlement, the remaining recourse of the claimant naturally points to the courts and employment of legal counsel, rather than to some third party who solicits employment as a middleman. There is no class distinction as to persons made by the act.

Construction of Statutes for Revoking of Licenses

(Kentucky State Board of Dental Examiners v. Crowell (Ky.), 294, S. W. R. 818)

The Court of Appeals of Kentucky says that the rules of construction of statutes require that, where a board or officer is granted the right or power to revoke a license for certain named reasons, causes or crimes, set out in the statutes, a license may not be revoked for any other or different cause or causes not clearly within the provisions of the statutes, or necessarily by implication included therein. In the case of *Matthews* v. *Murphy*, 27 Ky. Law Rep. 750, 63 S. W. 785, it was held that a license of a physician could not be revoked for "unprofessional conduct," for the reasons that the expression "unprofessional conduct" is too broad and general, and does not afford a standard by which a practicing physician might know what the board would hold to be unprofessional conduct, and the accused physician could not know, at the time the act was done, what standard would be thereafter erected by the board by which its effect was to be determined. As the statute does not advise beforehand as to what "unprofessional conduct" is, he could not knowingly or intentionally be guilty of it. It was also held in that case that the certificate and right to practice a profession, such as medicine or dentistry, is an estate or right of which the holder of the certificate may not be deprived without due process of law. The opinion in the case of *Forman* v. *State Board of Health*, 157 Ky. 123, 162 S. W. 796, does not lay down a contrary rule.

The revocations of license to practice dentistry are regulated by section 2636-6, Kentucky statutes, which is a part of the chapter on dentistry, under the head of "Medicine and Surgery." Here the statute does in a measure define "grossly unprofessional conduct," for which the board may revoke a license as that kind of professional conduct "likely to deceive or defraud the public," and, as these words are employed in connection with advertising by a dentist, this court thinks that it may assume that the legislature intended to allow the state board to revoke the license of a dentist for grossly unprofessional conduct in putting out, or causing to be put out, advertising cards, bills or printed matter which is "likely to deceive or defraud the public."

The charge on which the license of plaintiff Crowell was revoked was that he was convicted in a federal court of a charge of unlawfully possessing intoxicating liquors. This was not a felony, but merely a misdemeanor. It did not involve moral turpitude, as that expression is used in the statutes, for the moral turpitude authorizing the revocation of a license to practice dentistry must arise as a result of a conviction of a felony, for the statute says that the license of a dentist may be revoked on his conviction of a felony involving moral turpitude, and not for the conviction of a misdemeanor, even though it may involve moral turpitude. Therefore the attempted revocation of the plaintiff's license on the ground stated by the board was without effect, and was unlawful, and a judgment is affirmed which directed the board to reissue to him a certificate authorizing him to practice when he had complied with the requirements of the statute.

Admissible Expert Testimony of Physicians

(Tendrup v. State (Wis.), 214 N. W. R. 356)

The Supreme Court of Wisconsin says that in this homicide case, wherein it was contended that the accused was insane at the time of the act, it was claimed that the trial court erred in admitting the testimony of two physicians as experts. The physicians had listened to practically all the testimony of the defendant, and that which they had not heard was read to them. The physicians were asked whether, in their opinion, the defendant was sane or insane at the time of the killing, basing their answers on such testimony. The court carefully confined the witnesses to an expression of opinion based on such testimony of the defendant, and it was so given. The defense claimed that the testimony of such witnesses usurped the functions of the jury. That physicians are qualified as experts to give testimony in such cases is generally recognized in the law. That a physician may base his opinion on a given state of facts in a hypothetic question, or on uncontradicted testimony which he has heard, has been held by this court. The opinion of an expert on an ultimate fact to be determined by the jury is admissible in evidence under proper questions. This court sees no error in the trial court's ruling in this regard.

Information Charging Treatment on More than One Date

(Lemly v. State (Texas), 294 S. W. R. 856)

The Court of Criminal Appeals of Texas says that appellant Lemly was convicted of violating the medical practice act of that state (penal code of 1925, articles 739-746). The information charged in part that he, "on or about the 18th day of October, A. D. 1925, and on each day from said 18th day of October, A. D. 1925, until the 25th day of October, A. D. 1925, did then and there unlawfully treat and offer to treat a human being, to wit, Roy Johnson," etc. This prosecution was based on article 742, penal code of 1925, which reads:

> Any person practicing medicine in this state in violation of the preceding articles of this chapter shall be fined not less than fifty nor more than five hundred dollars, and be imprisoned in jail not exceeding six months. Each day of such violation shall be a separate offense.

It will be observed from reading the foregoing article that each day constitutes a separate offense, and the information in this case charged a violation of said act on the 18th day of October, 1925, and on each day from said date until the 25th day of October, 1925. This court is of the opinion that the contention was correct that the information was defective in alleging more than one offense, in that more than one date was alleged therein, and that the trial court erred in refusing to sustain the appellant's motion to quash the information; wherefore the judgment of the trial court is reversed and the cause ordered dismissed.

Society Proceedings

COMING MEETINGS

District of Columbia, Medical Society of, Washington, January 4. Dr. C. B. Conklin, 1718 M Street, N.W., Washington, D. C., Secretary.

Philippine Islands Medical Association, Manila, December 14-17. Dr. A. S. Fernando, College of Medicine, University of the Philippines, Manila, Secretary.

Radiological Society of North America, New Orleans, November 28-December 2. Dr. Robert J. May, 5005 Euclid Avenue, Cleveland, Secretary.

Society of American Bacteriologists, Rochester, N. Y., December 28-30. Dr. J. M. Sherman, Dairy Industry Building, Ithaca, Secretary.

Southern Surgical Association, Augusta, Ga., December 13-15. Dr. R. L. Payne, Medical Arts Building, Norfolk, Va., Secretary.

Western Surgical Association, Omaha, December 8-9. Dr. Harry P. Ritchie, Lowry Building, St. Paul, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in America for a period of three days. No foreign journals are available prior to 1921, nor domestic prior to 1923. Periodicals published by the American Medical Association are not available for lending, but may be supplied on order. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested).

Titles marked with an asterisk (*) are abstracted below.

American J. of Medical Sciences, Philadelphia

174: 439-578 (Oct.) 1927

*Gynecologic Foci in Relation to Scleritis and Episcleritis and Other Ocular Infections. L. M. Moench, Rochester, Minn.—p. 439.
*Displacement of Heart in Pneumonia in Children. J. P. C. Griffith, Philadelphia.—p. 448.
*Amnesia. Epileptiform Convulsive Seizures and Hemiparesis as Manifestations of Insulin Shock. W. L. Miller and J. H. Trescher, Baltimore.—p. 453.
*Encephalography. R. W. Waggoner, Philadelphia.—p. 459.
*Blood Transfusion: Simple Method to Determine Dose for Adults and Children. H. W. Jones, Philadelphia.—p. 466.
*Multiple Sclerosis. H. B. Conaway and F. C. Hill, Philadelphia.—p. 473.
*Venous Pressure as Guide to Venesection in Congestive Heart Failure. J. A. E. Eyster and W. S. Middleton, Madison, Wis.—p. 486.
Relation Between Cholesterolemia and Deposits of Cholesterol in Gallbladder. F. E. Blaisdell and L. R. Chandler, San Francisco.—p. 492.
Mucous Colitis Due to Food Allergy: Five Cases. E. Hollander, New York.—p. 495.
Diagnosis of Intestinal Obstruction by Roentgen Ray. W. K. Kalbfleisch, Wheeling, W. Va.—p. 500.
*Diabetic Acidosis and Leukocytosis. F. N. Allan, Rochester, Minn.—p. 506.
*Milk Injections: Body Temperature and Leukocytes. F. H. Rodin and R. W. McBride, San Francisco.—p. 511.
*Diet Rich in Liver in Pernicious Anemia. J. Huston, Ann Arbor, Mich.—p. 520.
*Nitrohydrochloric Acid in Hay-Fever. H. Beckman, Milwaukee.—p. 525.
Primary Involvement of Upper Extremities in Thrombo-Angiitis Obliterans (Buerger's Disease). G. R. Constam, Rochester, Minn.—p. 530.
Relative Value of Cholecystography and Original Lyon Test in Estimating Biliary Tract Function. W. W. Boardman, San Francisco.—p. 536.

Gynecologic Foci Cause Eye Infections.—Cases are cited by Moench as proof that the pelvic structures in women may be a focus of infection in certain ocular inflammations. There is no demonstrable parallel between the extent of the pelvic inflammatory process and that of the ocular inflammation. The infection is probably streptococcal rather than gonorrheal. Treatment by autogenous vaccine from pelvic streptococci is efficacious in cases of ocular inflammation, especially scleritis and episcleritis. The procedure chosen for eliminating the pelvic focus should be as conservative as is consistent with complete eradication of the focus and the importance of the ocular condition.

Displacement of Heart in Pneumonia in Children.—Of forty cases reported by Griffith, which were diagnosed as pneumonia, sixteen showed displacement of the heart to the affected side. The character of the disease in the patients examined indicated that the majority had croupous pneumonia without discoverable evidences of atelectasis. It is concluded that the cardiac displacement is dependent at least primarily on distention of the healthy lung.

Nervous Symptoms of Insulin Shock.—A patient, who had had diabetes for two and a half years, presented at times the ordinary symptoms of insulin shock, and at other times the more unusual symptoms of dysarthria and amnesia. During one especially severe reaction, in addition to these symptoms, convulsions and a definite hemiparesis were striking features. With an increase of caloric intake and a reduction and better distribution of the insulin dosage, noticeable reactions were avoided. Prompt administration of orange juice quickly relieved the milder symptoms, the speech disturbance and the amnesia. The effects of the administration of dextrose on convulsions and on hemiparesis could not be tested. Although the patient's most severe insulin reaction was accompanied by a marked hypoglycemia (0.03 per cent), a review of the literature made by Miller and Trescher reveals the fact that this is not an invariable accompaniment of such reactions.

Encephalography.—Waggoner presents a brief review of the literature on encephalography and makes an analysis of encephalographic studies on ten patients. It is stated that if properly done, the procedure is without serious, and in most cases without severe, after-effects. In one case in which both tests were used, the results agreed with those obtained by a Queckenstedt test.

Blood Transfusion and Dosage.—The uncertainty in dosage for blood transfusion is discussed by Jones. A standard amount of 400 cc. is set forth for the average man, 5 feet 8 inches tall and weighing 150 pounds (68 Kg.).

Incidence of Multiple Sclerosis.—The incidence of multiple sclerosis among 5,469 neurologic admissions is given by Conaway and Hill as 7 per thousand (thirty-eight cases). In 1,700 examinations of the brain and cord during the same period, the lesions of multiple sclerosis were found in nine instances (5.3 per thousand). In two of these cases, the clinical diagnosis had been incorrect, giving an error in diagnosis of 22 per cent. Multiple sclerosis was overdiagnosed in two cases, also showing 22 per cent error. An analysis of eleven verified cases of multiple sclerosis is presented, with a summary of the history and neurologic observations in ten. The ratio of males to females was 6 to 5. The average age of onset was found to be 34. The average age of death was 41½ years. The average duration of the disease was nine years. There were possible etiologic or precipitating factors in five cases: injury in two, alcoholism, childbirth and influenza. In all there was a gradual onset and progression of symptoms, with remission in five cases. The remissions, in all cases, occurred only in the early stages of the disease. The two symptoms which were present in all but one case were paraplegia and absent abdominal reflexes. Sensory disturbances were noted in seven patients and were mainly of the posterior column type. Charcot's triad was present in only four instances, and should not be required for a diagnosis. Optic atrophy was present in six cases, but in no case was it complete.

Venous Pressure as Guide to Venesection.—Routine venous pressure determinations are advised by Eyster and Middleton not only as a guide to venesection but also as a measure of its efficacy. Venous pressure is an excellent index of the myocardial reserve, and venous hypertension in the absence of local causes results only from cardiac decompensation.

Diabetic Acidosis and Leukocytosis.—Allan reports five cases of diabetic acidosis in which leukocytosis was found without infection being present.

Effect of Milk Injections on Temperature.—Of twenty-six patients receiving fifty milk injections, only one patient who had a normal temperature before an injection failed to show an elevation afterward. The average increase of temperature was 2 degrees. Twenty-four patients showed a leukocytosis, and of these, twenty-one showed an increase in the polymorphonuclears and a decrease in the lymphocytes. The average increase in the leukocytes was 4,882, or 53 per cent. The average increase in the polymorphonuclears was thirteen cells per hundred counted, or 4,679. The average decrease in the lymphocytes was 11.8 cells per hundred counted, or 181. The elevation of the temperature and the increase in the leukocytes and the percentage of the polymorphonuclears roughly parallel each other. Rodin and McBride are convinced that a study of the temperature and the leukocytes in milk injection offers an index to the therapeutic action of the milk.

Liver Diet in Pernicious Anemia.—In twenty-nine out of thirty cases of pernicious anemia analyzed by Huston, remissions resulted from the use of this diet. The remission persists for a period of time as yet undetermined if the diet is continued, but a relapse is to be expected if the diet is discontinued for very long. Evidence of bone-marrow regeneration is given by the increase in reticulated, stippled, polychromatophylic and nucleated red blood cells, and of decreased blood destruction by the progressive fall in the amount of blood bilirubin. The achlorhydria persists during the remission. The renal status should be considered in both the primary and secondary anemias when this diet is instituted.

Nitrohydrochloric Acid in Hay-Fever.—Beckman's results from the employment of nitrohydrochloric acid in the treat-

ment of seventeen cases of hay-fever, in conjunction with similar reports of private practitioners scattered through the literature of the past thirty years, led him to believe that perhaps an important remedial agent has been neglected.

American J. Ophthalmology, Chicago

10: 727-806 (Oct.) 1927

Echinococcus Cyst of Orbit in Chinese. H. J. Howard, Peking, China.—p. 727.
Differential Diagnosis Between Conjunctivitis Necroticans Infectiosa and Conjunctivitis Tularensis. C. Pascheff, Sofia, Bulgaria.—p. 737.
Steel in Vitreous: Case. H. L. Underwood, Vancouver, Wash.—p. 745.
*Foreign Protein Therapy Especially in Iritis. H. W. Scarlett, Philadelphia.—p. 747.
Nonoperative Treatment of Dacryocystitis. L. L. McCoy, Seattle.—p. 751.
Obstruction of Branch of Retinal Vessels. F. H. Rodin, San Francisco.—p. 753.
Chronic Conjunctivitis and Nasal Infection. N. Fox and E. Deutsch, Chicago.—p. 757.
Congenital Buphthalmos. H. V. Wüdemann, Seattle.—p. 761.
Practical Retinoscopy with Photoscope. J. I. Pascal, New York.—p. 765.

Foreign Protein Therapy in Diseases of Eye.—Scarlett has treated ten cases of iritis, one of uveitis, one of phlyctenular keratitis and one of corneal ulcer with diphtheria antitoxin, horse serum and a derivative of milk. The most striking feature about the use of foreign protein was the almost immediate relief from pain, especially in cases of iritis. The convalescing period was materially shortened, and the severity of the symptoms markedly lessened. Of the foreign proteins used, horse serum gave the most marked reaction, and also the quickest relief from symptoms. In experiments on rabbits' eyes, Scarlett was unable to detect any beneficial effects from injections of foreign protein.

American J. Public Health, Albany, N. Y.

17: 887-996 (Sept.) 1927

Health Forces at Work in Cincinnati. B. Marquette, Cincinnati.—p. 895.
Duration of Immunity Following Modern Smallpox Vaccine Inoculation. A. F. Gillihan, Sacramento, Calif.—p. 906.
How Health Officer May Obtain Newspaper Publicity. E. McKernon, New York.—p. 912.
Influence of Food on Bacterial Flora of Small Intestine. L. Arnold, Chicago.—p. 918.
Infant Mortality for 1926. S. J. Crumbine, New York.—p. 922.
Advisory Committees in Public Health Nursing Work in Cleveland. C. M. Templeton, Cleveland.—p. 928.

American Journal of Surgery, New York

3: 209-314 (Sept.) 1927

Cancer. J. Coupal, Washington, D. C.—p. 209.
Paget's Disease of Nipple and Gye's Hypothesis. J. M. Wainwright, Scranton, Pa.—p. 218.
*Modified Method of Blood Counting for Determination of Inflammatory Conditions. K. Roberts, New York.—p. 223.
*Acute Suppurative Pleurisy in Children. J. V. Bohrer, New York.—p. 232.
Obstructive Lesions Involving Vesical Outlet. J. A. Lazarus, New York.—p. 241.
*Dangerous Tendencies in Iodine Therapy. F. S. Wetherell, Syracuse, N. Y.—p. 247.
Thyrotoxicosis and Associated Vagotonic and Sympathicotonic Syndromes. V. E. Simpson, Louisville, Ky.—p. 249.
Retroversion of Uterus. M. K. Smith, New York.—p. 255.
Meaning of Backache in Gynecology. A. Stein, New York.—p. 259.
Ileocecal and Jejunocecal Intussusception in Infant: Case. H. B. Epstein, Newark, N. J.—p. 262.
Morbus Coxae Senilis. D. C. Durman, Detroit.—p. 263.
Abscess of Orbit. W. T. Garretson, Detroit.—p. 266.
Multiple Adenoma of Thyroid Complicated by Tularemia. A. B. McGraw, Detroit.—p. 269.
Unruptured Interstitial Pregnancy. H. M. Nelson, Detroit.—p. 271.
Importance to Surgery of Cystic Duct. J. E. Sweet, New York.—p. 274.
Mechanism and Pathogenesis of Acute Osteomyelitis. A. O. Wilensky, New York.—p. 281.
Modified Balfour Retractor. H. D. Furniss, New York.—p. 290.

Modified Method of Blood Counting.—A determination of the percentage of nonlobular forms among the polymorphonuclear neutrophils in the peripheral circulation is considered of value by Roberts because it is a classification that is simple. It will give a positive diagnosis of an inflammatory disease earlier than the usual white and differential cell count. The information thus gained is of great prognostic value in following the course of an inflammatory condition.

Acute Suppurative Pleurisy in Children.—A high calory dict is regarded by Bohrer as being essential in overcoming negative nitrogen balance. Repeated aspiration during the formative stage is advised for the relief of distress. Intercostal incision and drainage is a method of choice. Only local anesthesia should be used. A "flapper tube" aids materially in lung expansion. Blood transfusions are of great value, and exercises for lung expansion are of great importance.

Dangerous Tendencies in Iodine Therapy.—Wetherell urges that immediate steps be taken by health authorities to warn the public of the dangers of self-administration of iodine. Before using iodine in goiter, physicians should acquaint themselves with the indications. Health agencies should limit themselves to prophylaxis, and leave the treatment of existing goiters to the personal supervision of a private physician.

American J. Tropical Medicine, Baltimore

7: 271-352 (Sept.) 1927

*Jaundice and Liver Lesions in West African Yellow Fever. O. Klotz and W. Simpson, Toronto.—p. 271.
Trichomonas in Urine. M. J. Hogue, Philadelphia.—p. 327.
Unusual Anopheles Habitats in Canal Zone. J. B. Shropshire and J. Zetek, Ancon, C. Z.—p. 331.
Helminthiasis and Thyroid Gland. J. E. Ackert and G. F. Otto, Manhattan, Kan.—p. 339.

Rôle of Liver in Formation of Bile Pigment.—Analyses made by Klotz and Simpson of the liver in cases of yellow fever (with and without jaundice) lend support to the view that the reticulo-endothelial system is the important factor in bile pigment formation.

Ann. of Internal Med., Ann Arbor, Mich.

1: 1-51 (July) 1927

Relationship of Certain Focal Infections to General Disease in Infants and Young Children. M. Marriott, St. Louis.—p. 1.
Mucous Colitis (Colonic Vagotonia). J. D. Dunham, Columbus, Ohio.—p. 9.
Treatment of Carcinoma of Rectum by Radium: Case. T. E. Jones, Cleveland.—p. 13.
Diseases of Spleen. J. Tucker, Cleveland.—p. 17.
Abuse of Iodine, Especially of Iodized Salt, in Prevention of Goiter. C. L. Hartsock, Cleveland.—p. 24.
Enlargement and Displacement of Mediastinum. R. H. McDonald, Cleveland.—p. 28.
Use of Novasurol: Seven Cases. H. M. Andison, Cleveland.—p. 33.
Ocular Disturbances in Diabetes. A. D. Ruedemann, Cleveland.—p. 39.

Annals of Surgery, Philadelphia

86: 481-640 (Oct.) 1927

Repair of Hernia of Diaphragm. C. H. Mayo, Rochester, Minn.—p. 481.
Chronic Subdural Hematoma. F. C. Grant, Philadelphia.—p. 485.
Root Section Under Local Anesthesia for Radical Cure of Trigeminal Neuralgia Major (Tic Douloureux). W. T. Coughlin, St. Louis.—p. 494.
Roentgen-Ray Examinations in Diagnosis of Skull Fractures. A. Troell and P. Holmström, Stockholm, Sweden.—p. 502.
Experimental Surgery of Esophagus. G. L. Carrington, Durham, N. C.—p. 505.
Malignant Disease of Thyroid. E. M. Eberts and R. R. Fitzgerald, Montreal.—p. 515.
Secondary Symptoms of Exophthalmic Goiter. J. W. Hinton, New York.—p. 532.
Phlegmonous Gastritis. M. L. Weinstein and J. Klein, Chicago.—p. 534.
Side-Tracking Operations for Bile Duct Obstruction. A. O. Whipple, New York.—p. 540.
*Metastatic Carcinoma in Ureter. W. J. Carson, Milwaukee.—p. 549.
*Enlargement of Prostate with Characteristics Resembling Hodgkin's Disease: Malignant Granuloma. O. S. Lowsley and F. W. Harrah, New York.—p. 556.
Sustained Counterweight Traction in Hemostasis of Prostatectomy. M. W. Ware, New York.—p. 561.
Vital Factors in Management of Prostatic Obstruction. B. A. Thomas, Philadelphia.—p. 563.
Gonococcus Epididymitis: Three Thousand Cases. M. F. Campbell, New York.—p. 577.
Tuberculosis of Kidney in Pregnancy. W. S. Pugh, New York.—p. 591.
Pathology of Charcot Joints. W. J. Potts, Oak Park, Ill.—p. 596.
Preparation of Colloidal Lead for Therapeutic Use. H. Q. Woodward, New York.—p. 607.

Metastatic Carcinoma in Ureter.—Two cases of primary carcinoma of the prostate extending to the ureters by the lymphatics, and a case of carcinoma of the prostate which metastasized to the renal pelvis, are reported by Carson.

Malignant Granuloma of Prostate.—The case described by Lowsley and Harrah was one in which enlargement of the

prostate occurred and in which the histologic picture resembled malignant granuloma or so-called Hodgkin's disease.

Arch. Dermatology & Syphilology, Chicago

16: 383-538 (Oct.) 1927

Fungi and Fungous Diseases: I. A. Castellani, New Orleans.—p. 383. (To be Cont'd.)
*Livedo Reticularis. M. H. Ebert, Chicago.—p. 426.
*Comparative Value of Methods to Reduce Harmful Effects of Neoarsphenamine by Different Vehicles. I. B. Lipskeroff and Z. N. Grebin, Moscow.—p. 442.
Effect of Elevation of Body Temperature on Course of Experimental Syphilis in Rabbit. C. N. Frazier, Peking, China.—p. 445.
*Bismuth Poisoning in Treatment of Syphilis. J. M. Mora, Chicago.—p. 456.

Permanent Reticular Livedo.—A case of permanent reticular livedo is described by Ebert, and the literature reviewed. The case was associated with lesions of the tuberculid type on the lower extremities. A preexisting cutis marmorata served as a pattern and as a predisposing cause of the livid network. Proliferative and inflammatory changes in the deep nutrient vessels of the subcutis were present in both processes. No source of infection or toxemia was discovered.

Dextrose as Vehicle for Neoarsphenamine.—Neoarsphenamine is used in vehicles other than water, so that it may be given in larger doses and at shorter intervals. According to Lipskeroff and Grebin, of all vehicles used, dextrose is the most promising. Gelatin, blood serum and calcium chloride have some effect in some cases.

Bismuth Poisoning: Stomatitis.—A case of severe bismuth stomatitis is reported by Mora, and attention is called to the fact that the use of bismuth, while of great value in the management of certain cases of syphilis, is attended with some danger. Toxic phenomena induced by this drug may be evidenced by a gum line, gingivitis, stomatitis of varying severity, gastro-intestinal and renal changes and involvement of the central nervous system. In some instances, the administration of comparatively small doses of bismuth may result in death.

Arch. Neurol. & Psychiatry, Chicago

18: 495-670 (Oct.) 1927

Corpus Striatum: Secondary Degenerations Following Lesions in Man, Symptoms and Acute Degenerations Following Experimental Lesions in Cats. L. O. Morgan, Chicago.—p. 495.
*Intra-Ocular and Intracranial Pressure. F. Fremont-Smith and H. S. Forbes, Boston.—p. 550.
*Acetic Anhydride-Sulphuric Acid Test: Boltz Cerebrospinal Fluid Test. L. D. Cady, St. Louis.—p. 565.
Progressive Neuritis Muscular Atrophy. A. E. Kulkov, Moscow, U. S. S. R.—p. 572.
Adenoma of Hypophysis Without Acromegaly, Hypopituitarism or Visual Disturbances, Terminating in Sudden Death. E. R. Long, Chicago.—p. 576.
Psychosis in Child Aged Seven Years. H. H. Hart, Greenwich, Conn.—p. 584.
Neuropathic Taint in Migraine. W. Allan, Charlotte, N. C.—p. 587.
Hexylresorcinol as Cerebrospinal Antiseptic. H. P. Schenck, Philadelphia.—p. 590.

Intra-Ocular and Intracranial Pressure. — Experiments made by Fremont-Smith and Forbes show that, although the intracranial and the intra-ocular pressures are not directly dependent on each other, changes of hydrostatic or of osmotic pressure induced in the blood produce a parallel change in pressure in the eye and in the cranium, or, in the words of Claude Bernard, parallel "response to variations in the internal environment." These observations serve to emphasize again the similarity in the mechanisms for formation and for adsorption of intra-ocular and intracranial fluids, and to indicate that these mechanisms are fundamental in the fluid exchange of the body.

Boltz Cerebrospinal Fluid Test.—The Boltz test is a modification of the Liebermann cholesterol test, but the observations made by Cady fail to show that cholesterol is in any way responsible for the positive reaction. The modified Boltz test has been used on 799 specimens of spinal fluid. Positive reactions were found in from 79 to 94.6 per cent of patients with neurosyphilis when the test had not been rendered negative by treatment. The modified test was positive in 42.4 per cent of 264 other nonsyphilitic neuropsychiatric patients. It was found positive in 27.2 per cent of seventy-seven patients with constitutional diseases. This occurred for the most in patients with arthritis of the spine. The original test seems of some value in indicating the presence of abnormal processes in the meninges and the central nervous system, and promises to be of a value at least equal to other routine nonspecific chemical tests. The modified test may have considerable value in the control of treatment of neurosyphilis. These observations indicate that, whenever the test is used as a routine, the original and the modified technic should be used in each specimen of spinal fluid examined.

Archives of Surgery, Chicago

15: 499-666 (Oct.) 1927

Isolated Giant Cell Xanthomatic Tumors of Fingers and Hand. M. L. Mason, Chicago, and W. H. Woolston, Albuquerque, N. M.—p. 499.
*Malignant Tumors of Testis: Classification. J. H. Morris, New York.—p. 530.
*Bone in Arteriosclerotic Extremities. S. M. Cone, Baltimore.—p. 542.
Effect of Pregnancy on Emptying of Gallbladder. F. C. Mann and G. M. Higgins, Rochester, Minn.—p. 552.
Redundant Colon. H. Gauss, Denver.—p. 560.
Extrarenal Venous Circulation in Congenital Polycystic Kidneys: Varicocele Communicating Between Splenic and Renal Veins. E. Duskes, Baltimore.—p. 580.
Bilaterality of Liver. A. H. McIndoe and V. S. Counseller, Rochester, Minn.—p. 589.
Spontaneous Gangrene of Extremities. D. Lewis, Baltimore.—p. 613.
Suprarenal Hemorrhage: Case. C. E. Farr and K. Semsroth, New York.—p. 627.
*Relation of Nitrogen Bodies of Blood to Surgical Problems in Liver and Biliary Tract Disease: III. A. O. Wilensky and R. Colp, New York.—p. 635.
Dermoid Cyst of Mediastinum. S. L. Caldbick, Everett, Wash.—p. 660.

Malignant Tumors of Testis.—The case reported by Morris presents clinically the classic sequence of events, i. e., testicular tumor, visceral metastases and death. He concludes that (1) the large-celled tumor of the testis is of embryonal type; (2) that the theory of its invariable unicellular or homologous nature is disproved by his case, and (3) that the evidence adduced from this case substantiates Ewing's theory of its teratomatous origin.

Bone in Arteriosclerotic Extremities.—Progressive and retrogressive changes in bone and in soft parts were seen by Cone in thirty patients with gangrenous extremities. The circulation varied in each, passive hyperemia being the predominant factor. The retrogressive changes were atrophy and vital absorption of bone. The progressive and retrogressive changes varied with the vascular modifications. Metaplasia of bone and activity of bone cells occurred. The new bone formation and the fibrosis of the marrow were the predominant features in these cases.

Retention of Blood Nitrogen and Liver Disease.—Wilensky and Colp conclude that the cases in which retention of nitrogen in the blood is marked form only a small proportion of all cases in which renal injury occurs, and that this abnormality of the blood indicates great disturbances in the interdependent physiologic processes of the liver and the kidney. The clinical symptoms and the physiologic changes may indicate severe, and possibly fatal, lesions in the primary, hepatic stage of this biologic entity; in these cases, retention nitrogen in the blood is not demonstrable. The occurrence of retention and its continued progression should bring sharply to the attention of the clinician the fact that he is dealing with the terminal, renal stage of this biologic entity—a lesion that is fatal unless the patient obtains relief from the primary condition before recovery becomes impossible.

Boston Medical and Surgical Journal

197: 507-550 (Sept. 29) 1927

Joint and Bone Infections in Children. J. S. Stone, Boston.—p. 507.
*Cases of Syphilitic Meningitis. H. D. Lloyd, Boston.—p. 510.
Dispensability of Sympathetic Division of Autonomic Nervous System. W. B. Cannon, Boston; J. T. Lewis, Buenos Aires, and S. W. Britton, Baltimore.—p. 514.
Comparisons in Feeding Schedules for Full Term New-Born Infants. E. M. Hayward and L. Mowbray, Springfield.—p. 515.

197: 551-592 (Oct. 6) 1927

Cancer and Medical Profession. J. M. Birnie, Springfield, Mass.—p. 552.
Cancer and Public. R. W. Kelso, Boston.—p. 553.
National Aspects of Cancer Problem. G. A. Soper, New York.—p. 554.

Cancer Clinics. W. T. Hopkins, Lynn, Mass.—p. 556.
Cancer and Public Dependents. J. H. Nichols, Tewksbury, Mass.—p. 557.
Service of Pondville Hospital at Norfolk. R. B. Greenough, Boston.—p. 560.

Syphilitic Meningitis.—Lloyd analyzes nine cases. Headache occurred in eight, stiff neck in six, vomiting in two, and fever in seven. Only two cases showed a Kernig sign, and in seven the knee-jerk was normal. In seven, these manifestations occurred in the first year of the disease; in one, sixteen years after infection. One case was of the congenital type. Lloyd feels that lumbar puncture and the administration of Swift-Ellis serum by the lumbar route, or in more severe cases either by cistern puncture or intraventricular puncture, offers the best prognosis. Of the nine patients here reported, only one died.

Colorado Medicine, Denver

24: 295-328 (Oct.) 1927

High Carbohydrate Diets in Treatment of Diabetes Mellitus. W. D. Sansum, Santa Barbara, Calif.—p. 307.
Food Factors in Health and Disease. W. V. Gage, Denver.—p. 313.
Deafness in Childhood. J. H. Leyda, Denver.—p. 318.

Georgia M. A. Journal, Atlanta

16: 333-364 (Oct.) 1927

Reducing Obstetric Mortality. L. H. Wright, Augusta.—p. 333.

Illinois Medical Journal, Oak Park

52: 261-344 (Oct.) 1927

Venereal Disease Control. T. Parran, Jr., Washington, D. C.—p. 285.
Solitary Serous Renal Cysts: Case. L. D. Smith, Chicago.—p. 291.
Innovation in Recording Statistics for City Health Departments. N. O. Gunderson, Rockford.—p. 295.
Laws Regulating Placement of Illegitimate Babies in Homes for Adoption. R. J. Battis, Springfield.—p. 299.
Toxic Arsphenamine Nephrosis Treated with Sodium Thiosulphate. E. J. Stieglitz, Chicago.—p. 301.
Organization and Maintenance of Municipal Health Departments in Smaller Cities. A. Ailes, La Salle.—p. 303.
Roentgenotherapy in Benign Gynecologic Diseases. M. E. Hanks, Chicago.—p. 308.
Diathermy Treatment of Acute Gonorrhea in Male: 250 Cases. R. E. Hunt, Belvidere.—p. 313.
Obstetric Operative Procedures. J. J. Gill, Chicago.—p. 315.
Protein Therapy in Practice of Ophthalmology. B. W. Key, New York.—p. 318.
Summer Round-Up of Illinois Council of Parent-Teacher Associations. W. H. Buhlig, Chicago.—p. 323.
Heart Conditions Usually Unrecognized. F. O. Deneen, Bloomington.—p. 325.
*Treatment of Breast Infections. E. Cary and A. K. Van Dusen, Chicago.—p. 328.
Strains or Twists of Knee. E. B. Fowler, Chicago.—p. 330.
Experiments with Certified Milk. M. G. Slaughter, Chicago.—p. 330.
Service Physicians Render. J. L. Webb, Chicago.—p. 331.
*Tannic Acid Treatment of Varicose Ulcers. W. D. Carrell, Decatur.—p. 335.

Treatment of Breast Infections.—Cary and Van Dusen advocate injection into the buttock of manganese butyrate to control breast infections. It has been used in a series of eight cases of beginning breast abscess, which have all terminated in spontaneous resolution.

Tannic Acid Treatment of Varicose Ulcers.—Carrell has had striking results from the use of tannic acid solution in the treatment of varicose ulcers. After the ulcerated area has been rid of infection, it and the surrounding skin are cleansed with alcohol and dried; then, with an ordinary nasal spray, a 2.5 per cent solution of tannic acid is sprayed on every half hour until the ulcer is well crusted over. A fair crust will be formed in ten or twelve hours. Contracture of the crust will cause frequent cracking but the fissures are readily covered by additional spraying. No dressing is necessary after the treatment is begun. The crust formed is of hardened tissue of the base of the ulcer and not of hardened secretions. After several days of this treatment, a serous secretion forms under the crust but this is no indication for removal of the crust unless it becomes infected. As the epithelial margin moves centrally under the crust, the latter will become loosened and break off. Undue haste in removing the crust will tear away sections of the new epithelium. When ultraviolet ray therapy is also used, care must be taken lest the new epithelium receive too heavy a dosage. The end-results are said to be very gratifying.

Indiana State M. A. Journal, Fort Wayne

20: 319-376 (Sept.) 1927

Brain Tumors. W. E. Dandy, Baltimore.—p. 309.
Staining Tubercle Bacilli. H. Stempa, Evansville.—p. 320.
Coronary Occlusion: Case with Recovery. R. A. Solomon, Indianapolis.—p. 324.
Division of Tendo Achilles in Fractures of Lower Limbs. G. F. Beasley, Lafayette.—p. 327.

Johns Hopkins Hosp. Bull., Baltimore

41: 185-239 (Oct.) 1927

*Inactivation of Chicken Tumor Virus by Means of Aluminum Compounds. M. R. Lewis and H. B. Andervont, Baltimore.—p. 185.
*Behavior of Granulating Wounds of Rabbit to Various Types of Infection. C. R. L. Halley, A. M. Chesney and I. Dresel, Baltimore.—p. 191.
*Relation of Peritoneal Mesothelial Cells to Production of Ascites. G. Heller, Nashville, Tenn.—p. 207.
*Clinical Evaluation of Cholecystography. J. H. King and L. Martin, Baltimore.—p. 219.
Lymphatics of Gallbladder of Cat. W. L. Winkenwerder, Baltimore.—p. 226.

Action of Aluminum Compounds on Chicken Tumor Virus.—Various salts of aluminum were found by Lewis and Andervont to possess inactivating properties in respect to the chicken tumor virus.

Resistance of Granulating Wounds to Infection.—Experiments made by Halley et al. showed that when, under the conditions specified, a granulating wound in the rabbit was inoculated with a strain of *Streptococcus erysipelatis* which was capable of bringing about an intense inflammatory reaction in a fresh wound, little or no sign of a renewed inflammatory reaction was observed in the surrounding skin area. Furthermore, cultures from such a wound, taken from three to five days after inoculation, indicated that the streptococci disappeared or diminished in number. Somewhat less striking were the results obtained when the granulating wounds were inoculated with *Staphylococcus aureus*, but they tended to show essentially the same phenomenon, although the staphylococci did not disappear so rapidly from the granulating surface as did the streptococci.

Peritoneal Mesial Cells and Ascites.—The conclusions drawn by Heller from his experiments are that: 1. Neither the spleen nor the liver represent specialized areas for the transfer of fluids into the peritoneal cavity. 2. The spleen does not become edematous by the collection of fluid in any of its tissues, except the layer of mesothelial cells. 3. Fluids passing through spleen and liver to the peritoneal cavity pass at least in part through the cytoplasm of the mesothelial cells.

Value of Cholecystography.—King and Martin assert that the evidence afforded by the Graham dye test must be carefully compared with the information gained from clinical studies of the cases under consideration. It is helpful but not absolute.

Journal of Bone and Joint Surgery, Boston

9: 601-814 (Oct.) 1927

*Joint Mice in Shoulder. F. H. Albee, New York.—p. 601.
Three Cases of Tabetic Charcot's Spine. R. F. Herndon, Springfield, Ill.—p. 605.
*Arterial Vascular Disease of Extremities. G. E. Brown and M. S. Henderson, Rochester, Minn.—p. 613.
Congenital Dislocation of Knee Joint: Case. A. S. Griswold, Bridgeport, Conn.—p. 628.
Osteochondritis of Spine: Two Cases. S. W. Boorstein, New York.—p. 629.
*Formation of "Rice Bodies" in Tuberculosis. M. H. Rogers, Boston.—p. 636.
Movable Bullets in Spinal Canal. L. P. Bell, Woodland, Calif.—p. 639.
*Excluding Skin During Operation. P. Lewin, Chicago.—p. 648.
Comparative Results of Operative and Nonoperative Methods of Treatment of Tuberculosis of Spine in Children. F. C. Kidner and F. Muro, Detroit.—p. 649.
*Quantitative Tuberculin Reaction: I. Aid in Bone and Joint Diagnosis. R. F. Atsatt, Santa Barbara, Calif.—p. 657.
Etiologic Factors in Certain Cases of So-Called Sciatic Scoliosis. R. B. Osgood, Boston.—p. 667.
Internal Derangement of Knee Joint. J. O. Wallace and H. H. Permar, Pittsburgh.—p. 677.
*Tuberculosis of Knee Joint in Adult. M. S. Henderson and H. J. Fortin, Rochester, Minn.—p. 700.
Conservative Treatment of Compound Fractures. W. G. Stern, Cleveland.—p. 714.

*End-Results of Ramisection in Spastic Paralysis. S. F. Stewart, Los Angeles.—p. 724.
Treatment of Acute Osteomyelitis by Drainage and Rest. H. W. Orr, Lincoln, Neb.—p. 733.
Recurrent Multiple Osteomyelitis Due to Staphylococcus Aureus. R. M. Schauffler, Kansas City, Mo.—p. 740.
Method of Spinal Fixation in Tubercular Spondylitis in Children. S. A. Grantham, Joplin, Mo.—p. 748.
Fracture of Both Coronoid and Olecranon Processes of Ulna: Indications for Operation and Treatment. G. L. McWhorter, Chicago.—p. 767.

Joint Mice in Shoulder.—Sixty-four joint mice in the shoulder were the sequelae of minor football injuries, at first neglected and later submitted to ill advised osteopathic treatment without preliminary roentgen-ray examination, in the case of an active young civil engineer on whom Albee operated.

Arterial Vascular Disease of Extremities.—Meddlesome surgery of the toes was the irritating factor in producing gangrene in 50 per cent of the cases reported by Brown and Henderson. They urge that minor surgical measures on the feet of elderly persons, particularly men, must not be undertaken without the condition of the arteries first having been determined. Cognizance of this fact will prevent gangrene in a definite percentage of cases of arteriosclerotic disease.

Nature of So-Called Rice Bodies.—Rogers believes that "rice bodies" are composed of tubercular material, that they are at first attached to the wall of a tubercular sac, and that very probably they are formed from the center of a tubercle.

Excluding Skin During Operation.—When the skin is incised, Lewin applies a thin coat of 3.5 per cent tincture of iodine, or 2 per cent mercurochrome, to the edges. A towel is placed over the wound in the usual manner, and while an assistant grasps the towel and one skin edge with two toothed forceps, Michel clips are applied as in closing a wound, and the towel is folded back. The other skin edge is treated similarly. Clips are then placed in the corners of the wound and on the edges of the towels at both ends. When the operation is complete, the clips are removed by grasping both sides of each towel successively and pulling, which forces all clips to come off one side at one time.

Quantitative Tuberculin Reaction.—Atsatt asserts that it seems possible by quantitative examination to find a critical threshold which will usually establish a diagnosis in active tuberculous cases, although it must be considered that this evidence is only presumptive for osseo-articular disease until all other possible active foci have been ruled out. In cases of bone or joint disease in which the allergy falls below the critical threshold, and in the absence of certain modifying factors, active tuberculosis can, with a fair degree of certainty, be eliminated in the diagnosis.

Tuberculosis of Knee Joint in Adult.—Among 194 cases in which definite information as to the end-results was obtained by Henderson and Fortin, there was no operative mortality. In 171 patients (88.3 per cent) firm bony union with good function was secured. Union failed in twenty-two cases (11.3 per cent). In four of these, the bones were induced to unite by a bone graft, thus leaving eighteen (9.2 per cent) in which union did not occur. In five cases of the group, amputation was performed subsequently; in four, on account of continued drainage and nonunion, and in one case, on account of nonunion which might have been remedied by a bone graft. Of the 194 patients, 177 are living; seventeen (8.7 per cent) are dead. All but two of the seventeen died from extension of the tuberculosis; they lived an average of four and one-half years.

End-Results of Ramisection.—When associated with the relief of deformities, Stewart says ramisection constitutes the most perfect method for the treatment of certain cerebral spastics that has yet been suggested.

J. Pharmacol. & Exper. Therapeutics, Baltimore

31: 407-492 (Oct.) 1927

Action of Certain Quinine Derivatives: Local Anesthesia and Pulmonary Edema. W. E. Dixon and Premankur De, Cambridge, Mass.—p. 407.
*Chemotherapy: II: Internal Antisepsis by Means of Sulphato Compounds. M. Coplans and A. G. Green, London.—p. 433.
*Detoxification of Rattlesnake Venom by Sodium Ricinoleate. E. B. Carmichael, Cincinnati.—p. 445.
Relative Physiologic Properties of Certain Trialkyl and Dialkyl Barbituric Acids. A. W. Dox, Detroit, and A. M. Hjort, Hanover, N. H.—p. 455.
*Effect of Certain Dyes on Blood in Vitro. H. Wales, J. C. Munch and E. W. Schwartze, Washington, D. C.—p. 473.
Action of Diamino-Acetone. J. H. Wadia, Cambridge, Mass.—p. 481.

Internal Antisepsis.—Coplans and Green present evidence of the possibility of effecting internal antisepsis by the administration of compounds containing labile acid groups, the removal of which in vivo will give rise to active bactericidal compounds.

Detoxication of Rattlesnake Venom.—Rattlesnake venom in amounts equivalent to at least five lethal doses has been detoxified by Carmichael by sodium ricinoleate and injected into a rabbit without causing death. Experimental evidence is given which shows that the detoxification of the venom could not have been due to autolytic enzymes or spontaneous decomposition. Preliminary experiments indicate that sodium ricinoleate is able to detoxify rattlesnake venom in vivo.

Effect of Certain Dyes on Blood.—Spectrophotometric studies of the effect of various water-soluble dyes permitted for food colors have been made by Wales et al. on blood in vitro. Every dye studied was found to react with the oxyhemoglobin of the blood, producing "reduced hemoglobin." No evidence of any methemoglobin formation could be detected.

Journal of Urology, Baltimore

18: 321-431 (Oct.) 1927

Studies on Ureter and Bladder: IV. Regurgitation of Vesical Contents: Bladder Pressure-Curve in Human Being. R. C. Graves, Boston.—p. 321.
*Cystadenoma Pseudopapilliferum Malignum of Kidney with Metastases in Tongue. D. W. MacKenzie and T. R. Waugh, Montreal.—p. 331.
Bilateral Diverticula of Ureter: Case. N. P. Rathbun, New York.—p. 347.
True Hermaphroditism in Man. B. Kwartin and J. A. Hyams, New York.—p. 363.
Suprapubic Prostatectomy for Benign Obstructions: Fifty Cases. W. T. Briggs, Lexington, Ky.—p. 385.
Prostatotomy as Treatment of Urinary Retention Due to Acute Gonorrheal Prostatitis. A. G. Casariego, Havana, Cuba.—p. 401.
Leukoplakia of Bladder. E. L. Young, Jr., Boston.—p. 407.
Suprapubic Cystotomy in Bladder Paralysis. M. L. Boyd, Atlanta, Ga.—p. 413.
New Suprapubic Cup for Permanent Bladder Drainage. M. Muschat, Philadelphia.—p. 417.
Infarction of Testis. S. Lubash, New York.—p. 421.
Treatment of Acute Gonorrheal Epididymitis with Special Attention to Prevention of Azoospermia. H. K. Wade.—p. 427.

Malignant Cystadenoma of Kidney.—A case of cystadenoma pseudopapilliferum (malignum) of the kidney with metastases in the tongue is described by MacKenzie and Waugh. The gross appearance of the growth simulated hypernephroma. There was transformation from benign adenoma to malignant growth, both clinically and microscopically.

Laryngoscope, St. Louis

37: 629-706 (Sept.) 1927

Looking Forward. A. B. Duel, New York.—p. 629.
Progressive Deafness. H. S. Pritchett, New York.—p. 632.
Id.: E. E. Brown, New York.—p. 633.
Id.: Otologic Point of View. E. B. Dench, New York.—p. 634.
*Does Vitamin-Deficient Diet Cause Deafness? R. A. Barlow, Madison, Wis.—p. 640.
Circulation of Endolymph. S. R. Guild, Baltimore.—p. 649.
Early Development of Bony Capsule of Human Ear. T. H. Bast, Madison, Wis.—p. 652.
Résumé of Report of Bureau of Standards on Aids to Hearing. D. H. Walker, Boston.—p. 653.
Radium Implantation in Esophageal Cancer. J. Muir, New York.—p. 660.
*Malignancy of Larynx and Esophagus Treated by Radium Emanation. F. R. Herriman, New York.—p. 664.
Relationship of Endocrines to Otolaryngology. E. E. Poos, Detroit.—p. 671.
Rack for Tubular Endoscopic Instruments. M. C. Comer, Tucson, Ariz.—p. 675.

Deafness Not Caused by Vitamin Deficient Diet.—From his experimental results, Barlow concludes that the function of hearing is apparently not impaired by a diet deficient in vitamin.

Radiotherapy for Cancer of Larynx and Esophagus.—Herriman is convinced that regarded purely as a palliative, radium is far in advance of anything else heretofore put forward for the treatment of cancer of the larynx and

esophagus, and, in view also of the fact that all forms of radium therapy are still in large measure on trial, it seems to offer more hope of permanent benefit to a peculiarly hopeless group of cases than anything which has so far been made available.

Medical Journal and Record, New York

126: 401-464 (Oct. 5) 1927

Brain Abscess (Frontal Lobe) Complicating Frontal Sinusitis. C. J. Imperatori, New York.—p. 401.
Pathogenicity of Bacillus Botulinus. A. J. Hinkleman, Oklahoma City. —p. 406.
Panniculitis. V. Coates, Bath, England.—p. 409.
Hygienic Aspects of Coffee. R. R. Irvin, Pittsburgh.—p. 410.
Artificial Pneumothorax with Autopsy: Case. L. S. Peters, Alburquerque, N. M.—p. 414.
*Effect of Ultraviolet Light on Solutions. A. D. Bush, E. L. Jackson and A. W. Bell, Emory University, Ga.—p. 415.
Diagnosis of Disturbances of Endocrine Glands. W. Wolf, New York.—p. 417.
Treatment of So-Called Minor Maladies. A. H. Wright, Toronto.—p. 421.
Radium Emanation Treatment of Cervical Cancer: III. Histologic and Pathologic Changes Induced by Radium in Malignant Cervix. J. Muir, New York.—p. 422.
Mucomembranous Colitis and Nervous Spasmomyxorrhea. A. P. Cawadias, London.—p. 425.
*Chronic Ulcerative Colitis. W. A. Fansler, Minneapolis.—p. 427.
Hepatography. M. Einhorn and W. H. Stewart, New York.—p. 430.
Cholelithiasis: Case. L. Vaccaro, Philadelphia.—p. 433.
Duodenospasm. M. S. Shaine, New York.—p. 434.
Surgical Treatment of External Thrombotic Hemorrhoids. A. Crookall, Seattle.—p. 436.
Stomach Ache. J. W. Shuman, Los Angeles.—p. 438.
Relation of Secondary Signs of Gallbladder Disease to Graham Test. J. R. Carty, New York.—p. 440.
Origins of Medical Instruction in United States of America. C. G. Cumston, Geneva, Switzerland.—p. 441.
Jewish Contributions to Hygiene. E. Podolsky, New York.—p. 444.

Effect of Ultraviolet Rays on Solutions.—Rays from an ultraviolet source did not produce any detectable alterations in the pharmacologic reaction when exerted on solutions of strophanthin, aconitine, morphine, quinine or strychnine. Bush et al. also failed to find alterations in sugar solutions.

Chronic Ulcerative Colitis.—Fansler does not believe that there is any vaccine, vaccine filtrate or serum which has a specific action in most of these cases. Results obtained from this form of therapy are probably due to the reaction of the patient to a foreign protein. The reaction to antidysenteric serum and casein would also indicate this. He believes that a considerable number of these patients are benefited by this "stimulation therapy," and that casein or other foreign protein is as effective as a vaccine made from the organism. Drugs by mouth or locally are of distinct benefit, but no one drug is effective in all cases. Drugs should be changed as the condition of the patient demands. Local treatment is indicated in the subacute or declining phases of the disease but should not be used in the acute cases. Success in these cases depends on varying the treatment to suit the individual case. It is also essential that the treatment be continued for a considerable period after the clinical symptoms have disappeared.

Missouri State M. A. Journal, St. Louis

24: 443-486 (Oct.) 1927

Myoma of Spermatic Cord: Case. W. E. Leighton, St. Louis.—p. 443.
Foreign Body in Lower Air and Food Passages: Fifty-One Cases. M. A. Arbuckle, St. Louis.—p. 445.
Injuries to Eye. J. E. Jennings, St. Louis.—p. 460.
*Rubber Bag Inflated in Bladder as Aid to Bladder Surgery. C. S. Capell, Kansas City, Mo.—p. 463.
Fundus Diseases from Standpoint of Otolaryngologist. W. D. Black, St. Louis.—p. 465.
United States Navy Day. F. K. Soukup, Navy.—p. 466.
*Varicose Veins: Treatment. E. C. Mansur, Jefferson City.—p. 469.

Use of Inflated Rubber Bag in Bladder.—Capell suggests that the use of an inflated rubber bag in the bladder may be of value in two types of cases, viz.: (1) in operations on vesicovaginal fistula; (2) in certain cases of excision of a portion of the bladder wall or subtotal cystectomy for tumor, ulcer or diverticulum.

Injection Treatment of Varicose Veins.—The method which Mansur has found most successful is the injection of sodium salicylate. He uses 1 Gm. in 20 cc. of water with or without the addition of sodium iodide. The needle is inserted into the smallest and most distal branch of the vein to be treated and injection is done slowly, one minute being about the proper length of time for the procedure. Just as the injection is started, or as soon as the vein has been entered, the air pressure in the tourniquet is reduced to 40 mm. and kept at that pressure for three to five minutes after the injection has been completed.

New York State J. Med., New York

27: 1057-1112 (Oct. 1) 1927

Median Perineal Prostatectomy. P. Sims, New York.—p. 1057.
Treatment of Chronic Suppurative Otitis Media with Tubal Perforation with Aid of Catheterizing Eustachioscope: Case Reports. L. K. Pitman, New York.—p. 1061.
Treatment of Lupus Erythematosus with Gold Compounds (Sodium Salt of Aurothiobenzimidazol Carbolic Acid). B. Throne, A. S. Clark, L. S. Van Dyck and C. N. Myers, New York.—p. 1064.
Publicity for County Medical Societies. F. Overton, Patchogue.—p. 1074.
*Use and Misuse of Iodine in Treatment of Toxic Goiter. E. Goetsch, New York.—p. 1075.
Correction of Physical Defects in School Children. F. W. Sears, Syracuse.—p. 1081.
Pathology of Urticaria Pigmentosa. J. F. Fraser and M. N. Richter, New York.—p. 1082.

Iodine Therapy for Toxic Goiter.—Goetsch condemns the indiscriminate use of iodine by the patient with thyroid symptoms. He says that iodine treatment in exophthalmic goiter should be reserved for the period before operation, and should then be given intensively in doses of 10 minims (0.6 cc.) three times a day over a period of a week or ten days. Great caution should be used in treating the pregnant woman with iodine.

Public Health Reports, Washington, D. C.

42: 2382-2430 (Sept. 30) 1927

*Pellagra Preventive Action of Cowpea (Vigna Sinensis) and of Commercial Wheat Germ. J. Goldberger and G. A. Wheeler.—p. 2383.

Pellagra Preventive Action of Cowpea.—Goldberger and Wheeler found that the pellagra-preventive action (P-P) is present in the cowpea (and probably in the soy bean) in relatively small amounts. It is present in commercial wheat germ. Commercial wheat germ is probably somewhat richer in factor P-P than is the cowpea. It would be advantageous to include in the dietary, particularly of those in the area of pellagra endemicity, milling products of wheat containing as high a percentage as is practicable of the germ and the bran. Added strength is furnished the view that foods known to contain the so-called vitamin B contain the P-P factor. The experience with wheat germ constitutes evidence of the soundness of the hypothesis that the black tongue of dogs is the analogue of pellagra in man.

Rhode Island Medical Journal, Providence

10: 145-158 (Oct.) 1927

Cystic Appendix. W. P. Davis, Providence.—p. 145.
Chronic Ulcerative Colitis. C. C. Dustin, Providence.—p. 147.
Isolation from Blood of Organism Resembling Pathogenic Yeasts and Molds. L. E. Bourn, Providence.—p. 151.

Southern Medical Journal, Birmingham

20: 749-820 (Oct.) 1927

Conservative Ulcer Surgery. J. R. Verbrycke, Jr., Washington, D. C. —p. 749.
Operations for Peptic Ulcer. J. S. Horsley, Richmond, Va.—p. 751.
Resistance of Lower Animals to Combined Action of Diphtheria Toxin and Digitalis. C. C. Haskell, Richmond, Va.—p. 758.
*Sprue: Pancreatic Digestion. D. N. Silverman, New Orleans.—p. 762.
Cereal Foods: Advantages and Dangers. W. Western, Columbia, S. C. —p. 765.
Polymastism in Woman. W. D. Gill, San Antonio, Texas.—p. 769.
Advantages of Local Anesthesia in Tonsillectomies in Adults. J. C. Macdonald, Oklahoma City.—p. 772.
Essentials of Successful Local Anesthesia. B. H. Minchew, Waycross, Ga.—p. 774.
Management of Hypothyroid Patient. W. H. Higgins, Richmond, Va. —p. 779.
*Paralytic Knee Fusions. O. L. Miller, Charlotte and Gastonia, N. C. —p. 782.
Primary Repair of Perineum. W. W. Wells, Oklahoma City.—p. 784.
Responsibilities of Roentgenologist. J. H. Edmonson, Birmingham, Ala. —p. 789.
Epithelioid Carcinoma of Skin. M. M. Roland, Oklahoma City.—p. 794.
Obligation of Prenatal Clinics to Public at Large. A. N. Pickett, Louisville, Ky.—p. 797.

Glaucoma Simplex: Surgical Treatment. L. J. Goldbach, Baltimore.—p. 801.
Neurosyphilis. L. M. Gaines, Atlanta, Ga.—p. 804.
Developments in Uroroentgenology. W. H. Toulson, Baltimore.—p. 806.
Psychopathic Inferiority. R. F. Gayle, Jr., Richmond, Va.—p. 808.
Perforated Gastric and Duodenal Ulcer. A. P. Jons, Roanoke, Va.—p. 812.

Sprue in Louisiana.—Silverman reports four cases of tropical sprue, one of the nonintestinal type, which developed in permanent residents of Louisiana. Three of the cases presented the classic signs of sore mouth, anemia, diarrhea and marked loss of weight. The four patients showed normal digestive activities of the pancreatic ferments, as determined by analyses of the duodenal contents.

Paralytic Knee Fusions.—Miller has done knee fusions in twenty-five cases of infantile paralysis in which it was improbable that there would be sufficient muscle recovery to enable the patients to go without a permanent brace, or crutches, or to do away with the necessity of walking with the hand forcibly reinforcing the quadriceps. The age of the patients ranged from 9 to 16 years. The operation consisted of shearing the articular cartilage off the condyles of the femur, the tables of the tibia and the surface of the patella, and wedging the patella as a graft across the gap between the femur and the tibia. The epiphyses were not touched. The results were very gratifying.

U. S. Veterans' Bureau M. Bull., Washington, D. C.

3: 975-1088 (Oct.) 1927

Survey of Dermatologic and Syphilogic Diagnostic Work, U. S. Veterans' Diagnostic Center, Washington, D. C. F. J. Eichenlaub and M. H. Goodman.—p. 975.
Rôle of Artificial Pneumothorax in Treatment of Pulmonary Tuberculosis. C. M. Hazen.—p. 990.
Surgery of Chest and Genito-Urinary Tract in Tuberculosis. S. R. Maxeiner.—p. 994.
*Effect of Intercurrent Diseases on Clinical Course and Hospitalization Period of Cases of Pulmonary Tuberculosis. P. B. Matz.—p. 998.
*Bone Tuberculosis Treated by Actinotherapy. B. W. Carr.—p. 1003.
Gastric and Duodenal Ulcer. W. A. Phares.—p. 1005.
*Aid in Differentiating Between Cerebral and Cerebellar Tumors. H. Mella.—p. 1018.
Neuropsychiatric Problem of U. S. Veterans' Bureau. G. R. Statler.—p. 1024.
Prognostication of Hospital Curve for Neuropsychiatric Patients of United States Veterans' Bureau. L. J. Usilton.—p. 1031.
Relation Between Appearance of Tympanic Membrane and Impairment of Auditory Function. D. W. Tastet.—p. 1039.
Adjunct Dental Treatment in United States Veterans' Bureau General Medical and Surgical Hospital. W. S. Lee.—p. 1041.
Spontaneous Pneumothorax. H. R. Lipscomb.—p. 1045.
Allergy: Case. R. C. Buckley.—p. 1048.
Impressions of U. S. Veterans' Hospital, Palo Alto. K. Huntington.—p. 1061.
Care of Government Property. T. Pederson.—p. 1063.
Heliotherapy in Treatment of Laryngeal Tuberculosis. E. Fisher.—p. 1066.
Supervision in Connection with Occupational Therapy in Mental Hospital. A. Vary.—p. 1068.

Effect of Intercurrent Disease on Pulmonary Tuberculosis.—Matz shows that of 123 patients with pulmonary tuberculosis in whom there was an intercurrent respiratory disease, 20.33 per cent were discharged with the disease arrested, apparently arrested or improved, while 74.79 per cent died. These figures may be compared with those in 3,605 patients with pulmonary tuberculosis and without respiratory complications, of whom 40.61 per cent were discharged with the disease arrested, apparently arrested or improved, and 50.40 died. Of 1,095 patients with pulmonary tuberculosis without complicating intercurrent disease, 42.92 per cent were discharged with the disease arrested, apparently arrested or improved, and 48.40 per cent died. The patients with pulmonary tuberculosis without any complicating intercurrent disease received an average period of hospitalization of 246 days, and those with pulmonary tuberculosis with an intercurrent nonrespiratory complicating disease had the longest period of hospitalization; namely, 266 days.

Actinotherapy in Bone Tuberculosis.—Of 200 patients with bone tuberculosis treated by actinotherapy, Carr says thirty-three showed marked improvement; 124 showed improvement; twenty-three showed slight or slow gain, and twenty showed no improvement. Excluding the class in whom the gain was slow, 78.5 per cent of the whole number showed improvement or marked improvement, and 10 per cent were unimproved. Of another group of 262 patients, eighty showed marked improvement; 109, improvement; eleven, slow gain; sixty-two, no improvement.

Differentiating Between Cerebral and Cerebellar Tumors.—It is the opinion of Stenvers that optic nystagmus is dependent on reflex pathways in the cerebrum, and that it is affected only by cerebral and not cerebellar lesions. He proves this by means of a rotating cylinder. Mella cites a case in which the cylinder enabled him to diagnosticate a brain tumor.

Virginia Medical Monthly, Richmond

54: 403-470 (Oct.) 1927

Treatment of Peptic Ulcer. A. M. Willis, Richmond.—p. 403.
General Practitioner and Small Hospital. P. S. Smith, Abingdon.—p. 405.
Loss of Vision, with Endocrine Phase. W. C. Moomaw, Petersburg.—p. 410.
Prophylaxis of Diabetes. T. J. Tudor, Norton.—p. 412.
Disease: Past and Future. H. T. Marshall, University.—p. 415.
Blood-Calcium Deficiency in Episcleritis. F. P. Smart, Norfolk.—p. 424.
*Controlling Skin Irritation Following Colostomy. W. B. Marbury, Washington, D. C.—p. 426.
Treatment of Pulmonary Tuberculosis by Artificial Pneumothorax in Seventy-Six Cases. W. L. Dunn and F. B. Stafford, Sanatorium.—p. 428.
Hemorrhoids: Injection or Operation. W. W. Rixey, Richmond.—p. 434.
Diagnostic and Prognostic Criteria in Pulmonary Tuberculosis. W. D. Tewksbury, Washington, D. C.—p. 436.
Mental Readjustments. P. G. Hamlin, Williamsburg.—p. 439.
Management of Third Stage of Labor. M. T. Vaden, Buena Vista.—p. 440.
Difficulties in Administering Proper Doses of Insulin in Case of Diabetes, Complicated by Pus Infection. F. M. Perrow, Lynchburg.—p. 442.
Hydatidiform Mole: Case. S. P. Hileman, Millboro.—p. 446.
Pilonidal Sinus. H. M. Hayter, Abingdon.—p. 447.
Physical Diagnosis as Part of Social Case Work. B. B. Jones, Richmond.—p. 449.
Conclusions Regarding Retirement: Teacher in Medical School: Chief in Hospital. I. S. Stone, Washington, D. C.—p. 451.

Controlling Skin Irritation Following Colostomy.—The device used by Marbury to prevent constant soiling and irritation of the skin in the region of the wound is to fit a soft rubber tube, about 3 inches long and one-half inch wide, into the opening in the intestine, clamping the projecting end with a screw-clamp. Petrolatum gauze is placed immediately around the tube and the clamp rests on this. A small dressing of gauze is placed over the area and held with adhesive. One patient further modified this arrangement, apparently much to his satisfaction, by placing a safety pin through the end of the tube and closing the lumen by inserting a tip of gauze. A visiting nurse irrigates the colon through the tube twice a week; except on these occasions, the patient does not have to change the dressing. Nothing passes by the usual route.

Wisconsin Medical Journal, Milwaukee

26: 501-546 (Oct.) 1927

State Medical Society of Wisconsin, 1927. A. W. Rogers, Oconomowoc.—p. 501.
*Cerebrospinal Fluid: Cisternal and Lumbar Puncture. H. H. Reese, Madison.—p. 506.
Cholecystitis: Diagnosis. E. F. Mielke, Appleton.—p. 507.
Pulmonary Diagnostic Difficulties. L. M. Warfield, Milwaukee.—p. 510.
Diagnostic Problems. L. M. Warfield, Milwaukee.—p. 514.

Comparative Value of Cisternal and Lumbar Puncture.—A tendency to replace the lumbar puncture by the more modern cisternal puncture has developed among neurologists. Many authors assert that there is a distinct current from the ventricular system downward into the spinal canal, and that consequently the cerebrospinal fluid differs in its cellular and chemical compositions at different levels. To study this question, Reese performed punctures in a series of cases of neurosyphilis in both the cisternal and the lumbar region. He found that in normal individuals the cerebrospinal fluid has the same composition in the cisternal and in the lumbar regions. In pathologic fluids, the lumbar is more strongly positive than the cisternal fluid. This is especially true in regard to the cells, goldsol and globulin contents; but the Wassermann reaction is, as a rule, more strongly positive in the lumbar region. Reese feels that the dangers of cisternal puncture are overestimated. Indications for it are increased intracranial pressure, acute meningitis, tumors of the brain and cerebellum, severe neurosis, deformities of the spinal column and tumors and obstructions of the spinal canal. Contraindications are chronic meningitis, tuberculosis of the upper cervical vertebrae and basal skull fractures.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Radiology, London

32: 309-342 (Sept.) 1927

*Treatment of Vesical Carcinoma by Radium Irradiation. A. C. Morson.—p. 309.
*Results of Radiation in Cases of Uterine Carcinoma. E. Zweifel.—p. 313.
Radio-Immunization. A. Rosselet.—p. 316.
Case of Aphasia: Determination of Cortex Affected. A. P. Bertwistle.—p. 323.
Protection for Screen Examination. S. G. Scott.—p. 327.

Radium Therapy of Cancer of Bladder.—While radium does not effect a cure in cases of vesical carcinoma, the patient is restored to a state of health which enables him to live in fair comfort. Morson says that the response to irradiations varies with the type of growth, the best results being obtained with the ulcerative variety and the worst with the cauliflower-like lesion. It is the tumor which contains cell nests that can be relied on to shrink under the influence of the rays.

Radium Therapy of Cancer of Uterus.—Zweifel insists that in inoperable cases of cervical cancer of the uterus, roentgen-ray therapy is indicated, and may also cause complete cure.

British Medical Journal, London

2: 477-526 (Sept. 17) 1927

Treatment of Acute Lobar Pneumonia: Review. J. Hay.—p. 477.
*Id.: II. Vaccine Treatment of Acute Pneumonia. W. H. Wynn.—p. 480.
Influence of Internal Secretions on Sex Characters. F. A. E. Crew.—p. 483.
Amebic Dysentery: I. Life-History of Endameba Histolytica. W. Yorke and A. R. D. Adams.—p. 486.
Id.: II. Treatment. P. Manson-Bahr and E. G. Sayers.—p. 490.
Retromalleolar Tuberculosis Cured by Tuberculin. R. Carswell.—p. 493.
Ovarian Hemorrhage from Ruptured Blood Cyst. G. Chambers.—p. 493.
*Treatment of Facial Paralysis Due to Exposure. A. P. Bertwistle.—p. 494.
*Treatment of Acute Traumatic Synovitis of Knee. W. E. Home.—p. 494.
*Retroverted Gravid Uterus with Intestinal Obstruction and Rupture of Bladder. F. C. Pridham.—p. 494.
Hot Blanket Pack in Persistent Vomiting. J. B. Berry.—p. 495.
Postnatal Ossification of Parietal Bone. W. Edwards.—p. 495.

Vaccines in Treatment of Acute Pneumonia.—As at present true lobar pneumonia is comparatively infrequent, and the majority of cases are bronchopneumonias of mixed infection, Wynn uses a vaccine containing equal parts of pneumococci, streptococci and *B. influenzae*, 100 million of each. The results in 100 consecutive patients were that forty-nine were injected during the first three days, and of these only one died. This patient was a pregnant woman who had had chronic asthma and who was confined forty-eight hours after the onset of pneumonia. Of fifty-one injected after the third day, twelve died. This shows the importance of treatment before dangerous intoxication has occurred. Of patients injected during the first day, 83 per cent had a normal temperature in twenty-four hours and 100 per cent in forty-eight hours. Of those injected on the second day, 57 per cent had a normal temperature in twenty-four hours, 93 per cent in forty-eight hours, and 100 per cent in seventy-two hours, whereas of those injected for the first time on the third day, only 20 per cent had a normal temperature in twenty-four hours, 60 per cent in forty-eight hours, and 73 per cent in seventy-two hours.

Wire Splint for Facial Paralysis.—A wire splint made of covered electrical wire (not flex), about 15 inches long, was used by Bertwistle in one of three cases cited. The wire was bent in the middle and covered with linen tape. The doubled end was bent in the form of a retractor, and inserted in the angle of the mouth. The free ends were carried round the ear in the manner of spectacles, and in such a way as to draw the angle of the mouth upward and backward. The device is worn as much as possible, day and night. The patient stated that articulation was easier with the apparatus in position and that it felt more comfortable. Recovery started six weeks later and was almost complete.

Treatment of Acute Traumatic Synovitis of Knee.—Home advocates aspiration of the joint, repeated if necessary in these cases. Any joint that seems to have more than half an ounce of fluid in it is aspirated and the puncture sealed with collodion; over the puncture, cotton-wool and an elastic bandage are adjusted, producing gentle and uniform pressure. The patient remains in bed, without a splint, though his leg might be swung for two or three days. No patient was away from work more than seventeen days, and in none was it necessary to aspirate twice.

Pregnancy; Retroversion; Intestinal Obstruction; Rupture of Bladder.—A sudden acute attack of abdominal pain, colicky in character and accompanied by vomiting, initiated the illness in Pridham's case. There was no previous history of gastric, biliary, renal or appendicular trouble, and menstruation had been regular until four months previously. The woman thought that she was about four and a half months pregnant. The bowels acted regularly. The abdomen was slightly distended, and a tumor, dull on percussion, was felt above the pubes, passing down into the pelvis. There was no sign of free fluid. On vaginal examination under an anesthetic, the uterus appeared to be retroverted and fixed in the pelvis. An unsuccessful attempt was made to replace it. When the patient recovered from the anesthetic, abdominal pain with vomiting continued, and distention increased. A few hours later, the patient aborted a four and a half months' fetus, but the abdominal distention continued and signs of free fluid were found, particularly in the left flank. Exploratory laparotomy was undertaken. The peritoneal cavity was found to be full of clear fluid. The small intestine was distended and obstructed by pressure at a point where the postero-inferior wall of the elevated bladder made an angle with the anterior wall of the retroverted and enlarged uterus. There was a small rent in the postero-inferior wall of the bladder through which urine was passing into the peritoneal cavity. The intestine was easily freed unharmed and the bladder wall sutured. The abdomen was closed except for a rubber drain to the bladder area, and the uterus was brought up from its retroverted position. For two days after operation the patient had complete anuria and complained of intense thirst; then urine was passed normally, but very intense and persistent diarrhea developed and continued for four or five days, during which time she became very ill. She improved slowly, and has since been delivered at full term of a normal infant, after the newly pregnant uterus had again become retroverted.

Indian Medical Gazette, Calcutta

62: 479-542 (Sept.) 1927

Medicolegal Study of Calcutta Riots of 1926. J. C. De.—p. 479.
*Anemia of Pregnancy. S. A. McSwiney.—p. 487.
*Id. M. I. Balfour.—p. 491.
Sigmoidoscope as Aid to Diagnosis in Chronic Dysentery and Its Sequelae. J. B. Hance.—p. 496.
Plasmochin in Treatment of Malaria. W. Fletcher and K. Kanagarayer.—p. 499.
Epidemic of Dropsy Among Indians in Fiji. A. D. Sagayam.—p. 506.
Incubation Period of Kala-Azar. H. E. Shortt.—p. 507.
*Treatment of Smallpox by Intravenous Administration of Potassium Permanganate. J. H. Theodore.—p. 508.

Anemia of Pregnancy.—McSwiney analyzes forty-three cases of anemia of pregnancy in which no obvious cause for the anemia could be found. The condition was five times more common under the age of 30 than over it, and one and a half times more common under the age of 25 than over 25. Three out of the forty-three cases were multiple pregnancies, more than five times the usual incidence of twins. The spleen was palpable in seven cases, and greatly enlarged in three cases. The liver was palpable in five cases. Abnormal red cells—poikilocytes, normoblasts and megaloblasts—occurred in the graver cases as a rule. The total white cell count did not show any striking variation. Edema of the feet and puffiness of the face were common; a general puffiness of the whole body occurred in fourteen cases, in three of which no albumin was found in the urine. It is very unusual for one of these cases to go to full term. While there is no tendency to abortion, there is a very marked tendency to miscarriage and premature labor. There is no tendency to postpartum hemorrhage: in fact, the patients seemed to have particularly bloodless labors. There is obviously no weakening of the powers of contraction and retrac-

tion of the uterus. McSwiney suggests that some cases may be due to the destructive action of the chorionic villi on the mother's red cells, running riot, as it were, in a manner comparable to the destructive action of the syncytium running riot in chorion carcinoma. It has been suggested that the mother's restorative power necessary to counterbalance the normal destruction of her red cells is inadequate. A very large number are due to concealed syphilis.

Anemia of Pregnancy.—Analysis of 426 cases of anemia of pregnancy has convinced Balfour that it is a toxemia due to the products of conception. It has a good deal in common with that best known of the toxemias, eclampsia. Both conditions occur during the second half of pregnancy and both are more frequent in primiparas, in both complete recovery takes place after delivery (when death does not occur), and in neither do recurrences usually take place in subsequent pregnancies. There is one interesting point of difference. In anemia, the fetus never suffers from the same blood condition as the mother, and when it dies, it does so apparently from lack of nourishment. In eclampsia, the child occasionally suffers from fits. The two diseases do not occur in the same patient. The indication is that women who lead confined, inactive lives, while enjoying a good dietary, are more liable than others, and this is in favor of the toxemia theory.

Potassium Permanganate Injections in Smallpox.—Theodore found on experimentation on animals, and after a clinical trial in three cases, that 10 cc. of a 1:500 solution of potassium permanganate, administered intravenously, does not exhibit any toxic properties. Potassium permanganate has a definite tendency to abort the evolution of vaccinia virus when administered intravenously into rabbits.

Irish Journal of Medical Science, Dublin

6: 297-352 (July) 1927

Significance of Nitrogen Metabolism and Basal Metabolic Rate in Selection of Cases for Sanocrysin Treatment. F. W. Godbey.—p. 297.
*Treatment of Acne Vulgaris and Deep-Seated Folliculitis. W. G. Smith.—p. 310.
Thallium Epilation in Ringworm of Scalp. M. Drummond.—p. 314.
Epilation of Thallium Acetate. E. T. Freeman.—p. 318.
Bence-Jones Proteinuria. G. Bewley.—p. 321.
Syphilis of Central Nervous System. R. H. Micks.—p. 325.
Acute Emergencies of Practice: Dyspnea. G. E. Nesbitt.—p. 329.

Treatment of Acne Vulgaris.—Smith generally uses tincture of iodine and one third of phenolated glycerin, which is forced in by a rounded blunt-pointed stick, twisted round in the interior of the nodule. Then he rubs in ammoniated mercury or mild mercurous chloride ointment.

J. Tropical Medicine and Hygiene, London

30: 229-240 (Sept. 15) 1927

Action of Bacilli of Paratyphoid Dysentery and Metadysentery Groups on Various Starches. A. Castellani.—p. 229.
*Relationship of M. Melitensis and B. Abortus. C. Cerruti.—p. 230.

New Name for Bacillus Melitensis.—To avoid the confusion arising from the name "melitensis," in view of its pathogenicity to man, producing, as it does, undulant fever, and in the case of animals, abortion, often epizootic in character, Cerruti suggests that it be given the name of *Brucella melitensis-abortus*, Bruce, 1887.

Lancet, London

2: 535-584 (Sept. 10) 1927

*Nature of Bacteriophage. C. Prausnitz.—p. 535.
*Wertheim's Hysterectomy for Carcinoma of Cervix. W. F. Shaw.—p. 538.
*Blood Pressure in Psychoneurosis. S. B. Hall.—p. 540.
*Meningococcal Meningitis in Infants and Children, Treated by Flexner's Serum. G. K. Thornton.—p. 544.
*Cephalic Tetanus. W. Fletcher and J. P. Fitzpatrick.—p. 545.
*Prolonged Tachycardia, Associated with Congenital Heart Disease, in Child Fifteen Months Old. H. B. Russell and J. B. Ellison.—p. 546.
*Suturing Fat Abdominal Wall. A. Edmunds.—p. 547.

Nature of Bacteriophage.—Prausnitz attempts to prove the variability of different kinds of the bacteriophage, and the possibility of accustoming them to the noxious effects of certain disinfectants. In his opinion, the facts presented allow of no more plausible explanation than that the bacteriophage is a living organism.

Results of Wertheim's Hysterectomy.—Among the seventy-six cases analyzed by Shaw, there were sixteen deaths due to operation, twenty-five recurrences and two deaths from other causes. Thirty patients were alive and well five years after the operation, and three could not be traced. After shock, sepsis of the raw pelvic tissue and sepsis of the urinary tract were the most common causes of death. The majority of recurrences occurred in the first or second year. Of fifty patients operated on more than seven years ago, sixteen are alive and well after seven years; recurrence took place in eighteen.

Blood Pressure in Psychoneuroses.—The blood pressure in twenty-two cases of neurasthenia, thirteen cases of psychasthenia and twenty-six mixed cases was measured by Hall. It was found to be abnormally low. In cases of prolonged mental strain or anxiety neurosis, and in a small group of psychasthenic persons, the blood pressure may be abnormally and persistently high. The blood pressure when abnormally high falls to within normal limits as the mental condition yields to treatment. The initial blood pressure readings in highly strung or neurotic patients may appear to be higher than is actually the case, even to the point of considerable abnormality. The sudden rise of pressure is excited by some extraneous stimulus to the emotions, and thence directly through the sympathetic system, or indirectly by sympathetic system and suprarenals, to the vasomotor system. It is possible that continued emotional stress causing frequent or continuous vasoconstriction may lead ultimately to permanent thickening of the vessel walls. The patient's mental state plays an important part in the etiology and treatment of hypertonus, which occurs in functional cases. It is worthy of consideration in those more chronic cases of high blood pressure, and in cardiovascular conditions which appear to result from mental strain.

Flexner's Serum in Meningococcal Meningitis.—Thornton reports excellent results from the use of Flexner's serum in these cases. The mortality was only 26.6 per cent, as against 80 per cent in cases treated by lumbar puncture and 78.5 per cent in cases treated with serum other than Flexner's.

Cephalic Tetanus.—In the case cited by Fletcher and Fitzpatrick the tetanus was limited to the head and neck. A box had fallen on the patient's head, and had made a small punctured wound above the outer end of his right eyebrow, whence his friends had extracted two long splinters of wood which had been driven beneath the skin of the temple. Ten days after the accident, he found that he was unable to close his right eye or to open his mouth to its full extent. A few days later he began to experience difficulty in swallowing. The face was paralyzed on the same side as the wound; the right eye could not be closed, the corner of the mouth hung down, and the nasolabial fold was obliterated. The jaws were stiff and could not be separated more than half an inch. If the patient tried to open them farther, they closed with a snap. He was excited, restless, and full of terror, like a man with rabies. From time to time there was a tic-like twitching of the muscles on the left side of the face, but there was no stiffness of the neck, and the head could be turned freely. The chest and abdomen moved normally in respiration. The use of the limbs was unimpaired; the patient could use his fingers to pick up small objects, and he walked quite easily. He was able to articulate, but it pained him to talk. He could neither cough, hawk nor spit. He died about three weeks after the injury, and twelve days after the appearance of the first symptoms.

Prolonged Tachycardia in Infant.—In the case cited by Russell and Ellison, a ventricular rate of about 300 beats per minute was maintained without intermission for several days on end, without signs of severe cardiac failure or distress.

Suturing Fat Abdominal Wall.—The suture employed by Edmunds is the eversion stitch described by him in 1925. This is inserted well away from the wound on one side; it picks up the whole thickness of the fat—or even the deeper tissues if tension stitches are required—and emerges at a corresponding point on the other side. It is then passed back in the reverse direction, picking up the extreme edges of the incision on the way, and is loosely tied. This leaves a loop of suture on either side of the wound lying flat on the skin.

To prevent these loops cutting into the skin, a piece of corrugated rubber sheeting is used. When enough sutures have been introduced, usually about an inch apart, a pair of long artery forceps is passed under loops of the sutures on one side; the rubber sheeting is then compressed laterally, grasped by the forceps, and drawn under the row of suture loops. This is then done on the other side of the wound, which may gape a little between the sutures. It is usually possible to adjust the edges with a pair of dissecting forceps, so that they are accurately apposed; or, if the surgeon prefers it, a row of running sutures may be inserted. These need not be tied, and can be removed as soon as the wound has agglutinated—that is to say, in three or four days. If drainage is required there is plenty of room between the big stitches, and the presence of the rubber will not complicate matters at all. When the stitches are to come out, they should be cut over the rubber on the side opposite to the knot, so that they will draw out simultaneously from the deep and superficial punctures.

2: 585-636 (Sept. 17) 1927

Mental Unity and Mental Dissociation. W. Brown.—p. 585.
*Luminal-Sodium in Treatment of Epilepsy. J. T. Fox.—p. 589.
*Influence of Oral Sepsis on Carbohydrate Tolerance in Nondiabetics: Effect of Dental Treatment. W. H. Evans, D. Riding and E. E. Glynn. —p. 592.
*Multiple Cavernous Angiomas of Sweat Ducts Associated with Hemiplegia. B. W. C. Archer.—p. 595.
*Result of Roentgen-Ray Treatment of Primary Malignant Intrathoracic Tumors. F. G. Chandler and C. T. Potter.—p. 596.
*Rupture of Uterus at Site of Previous Cesarean Section. J. St. G. Wilson.—p. 598.
*Primary Actinomycosis of Lungs with Secondary Peritonitis. C. D. Coyle.—p. 600.
Perforation of Gastric Ulcer in Boy of Twelve. V. P. Robinson.—p. 600.

Phenobarbital Sodium in Epilepsy.—Fox records the results obtained over a period of five or six years by the administration of phenobarbital sodium to epileptic persons who failed to improve on other methods of treatment. The dosage of phenobarbital sodium has varied from 1 to 3 Gm. given once in the twenty-four hours, either in the morning or evening. The great majority of the patients have had 2 Gm. a day. In the majority of cases, benefit was obtained at first, but if the fit-incidence over periods of weeks, months or years is studied, it is apparent that there was a progressive tolerance, sometimes slow, sometimes rapid, to the drug. In about one case in twenty, complete and probably permanent arrest of all seizures occurred. These favorable cases did not show any features in common which would enable one to define the type of person likely to benefit by the treatment. Whether the administration of phenobarbital was of value or not, when it was stopped an increase of fits almost always followed, the incidence often being higher than before phenobarbital was started. This is a serious feature of phenobarbital medication. Grave mental alterations followed the use of phenobarbital but they were rare, and it is submitted that they were the direct result of the abrupt cessation of attacks in chronic epilepsy, rather than phenobarbital itself. Rashes were observed in only two cases. The investigations show that phenobarbital is a drug that should be used with caution in epilepsy. It should not be prescribed unless there can be careful supervision of the patient's behavior as well as an accurate record of the fits occurring. An immediately favorable effect is not a criterion of ultimate benefit.

Effect of Oral Sepsis in Diabetes.—Evidence is submitted by Evans et al., produced from a study of eleven cases, that oral sepsis in nondiabetic patients is usually associated with slight but definite diminution in carbohydrate tolerance. This diminution was greater in three cases of acute alveolar abscess than in four of pyorrhea. Subsequent dental treatment of five of these seven cases, which cured or greatly improved the oral disease, was associated with an increase in tolerance, so that it practically equaled the tolerance of the normal control. This improvement from treatment is presented as evidence that the oral sepsis caused the diminution in carbohydrate tolerance. Such a depression might, if prolonged, perhaps lead to glycosuria or even to diabetes.

Angiomas of Sweat Glands.—The case described by Archer would seem to be one of congenital multiple cavernous angiomas of the sweat ducts, associated with, but not due to, syphilis in a man, aged 30, with a history of two hemiplegic attacks and symptoms of cerebral softening and hypothyroidism.

Roentgenotherapy of Intrathoracic Tumors.—One patient out of fifty-nine treated with roentgen rays by Chandler and Potter appears to have been cured. All the untreated patients investigated died. Except in the patient who was cured, there is no evidence that life was prolonged. Except in a few cases, symptoms do not appear to have been relieved by roentgen-ray treatment. Yet the psychologic effect is great.

Cesarean Section and Rupture of Uterus.—In the first of the three cases reported by Wilson, there were definite signs of the onset of labor—dilatation of the external os and the presence of a "show"—though uterine contractions could not be felt. In the second there was no evidence of the onset of labor; in the third definite contractions of the uterus were felt, together with slight dilatation of the cervix, and a "show."

Actinomycosis of Lungs with Peritonitis.—The order of events in Coyle's case appears to have been: (1) primary actinomycosis of the lungs; (2) perforation of the diaphragm with production of left subphrenic abscess and generalized peritonitis. The patient died.

Japanese J. Obst. & Gynec., Kyoto

10: 1-66 (June) 1927

Action of Pituitary Extract and Epinephrine on Vessels of Placenta. J. Kosakaé.—p. 2.
Effect of Chloroform Narcosis on Blood and Blood Serum. S. Takiyama. —p. 28.
*Intracranial Hemorrhage in New-Born. H. Yagi.—p. 30.
Transportation of Coloring Substances into Amniotic Fluid. H. Sakuma. —p. 34.
*Dystocia Due to Congenital Edema of Fetus. H. Yagi.—p. 36.
*Susceptibility to Drugs of Ureter of Nongravid and Gravid Animals. J. Sano.—p. 41.
Menstruation of Japanese Schoolgirls. K. Shi.—p. 42.
Excretory Functions of Mucous Membrane of Uterus: I. Excretion of Pigment. H. Sakuma.—p. 43.
Prophylaxis of Eclampsia. T. Nonaka.—p. 48.
Influence of Dilution of Blood on Coagulation and Substance Connected with Coagulation in Erythrocytes. T. Sato.—p. 50.
Influence of Various Kinds of Bacillus Toxin on Uterus. S. Takiyama. —p. 52.
Revivification of Quiescent Heart by Means of Electricity. K. Hayashi. —p. 56.

Intracranial Hemorrhage in New-Born.—Out of ninety-six cases of stillbirth in which Yagi made dissections, there were thirty-one cases in which intracranial hemorrhage could be taken as the immediate cause of death. The process, localization and degree of hemorrhage were analyzed and compared with the clinical features. Classified by parity, there were eighteen primiparas and eight multiparas who had more than five childbirths, out of thirteen pluriparas. This can be explained by the fact that the duration of labor is generally longer for a primipara, and complication of various diseases is much found in pluriparas. The duration of labor apparently was not an etiologic factor of great moment. There were five cases of forceps, six cases of breech presentation, three cases of version and two cases of metreulysis. There were eleven cases of suffocation without any perceptible pressure. The remaining four babies died from twenty hours to three days after birth. A subdural hemorrhage was present in almost all cases; laceration of the tentorium cerebelli and of the falx cerebri was present in ten cases. There were six subarachnoid hemorrhages, four ventricular hemorrhages and five hemorrhages into the brain substance. Yagi asserts that there is a close connection between asphyxia in labor and the death of the fetus.

Dystocia Due to Congenital Edema of Fetus.—Yagi cites a case which he believes illustrates that this edema of the fetus is the outcome of a toxemia of pregnancy. His patient suffered from marked edema during pregnancy and recovered very soon after labor. Owing to this toxemia the kidney of the mother was injured and the toxin furthermore affected the fetal kidney, causing its hypoplasia.

Susceptibility of Ureter to Drugs.—Sano concludes that the sensibility of the ureter to drugs is lessened in pregnancy and that the hindered innervation of the ureter has a close connection with the development of pyelitis gravidarum.

Annales des Maladies Vénériennes, Paris

22: 561-640 (Aug.) 1927

*Unusual Localization of Bullous Syphilids in Heredosyphilitic Infant. N. Vatamanu.—p. 561.
Treatment of Gonorrhea: Ozonothermy. J. E. Marcel.—p. 570.
Case of Syphilitic Reinfection. G. Belgodère.—p. 584.

Unusual Localization of Bullous Syphilids in Heredosyphilitic Infant.—In the case of hereditary syphilis reported by Vatamanu, the bullous syphilids were not present until some weeks after birth. They appeared on the scalp, on the face and on the upper part of the thorax. The lesions were not unlike those of impetigo neonatorum, but the microscope revealed spirochetes in the contents of the bullae.

Archives de Médecine des Enfants, Paris

30: 441-504 (Aug.) 1927

Neuropsychiatry in Children. G. Heuyer.—p. 441.
*Lymphatic Colitis. P. Sittler.—p. 455.
Pleonosteosis in Heredosyphilis. G. Laroche and Barthes.—p. 460.
Chronic Hemichorea of Tuberculous Nature. C. Voudouris.—p. 467.
Hematemesis in New-Born Infant. G. Barraud.—p. 472.

Lymphatic Colitis.—One of the most frequent symptoms of the status lymphaticus in the child is irritation of the lymphatic tissue of the large intestine, particularly that of the descending colon. A reduction of the quantity of fats ingested effects a speedy amelioration. For the excess of milk, butter and egg-yolk, one may substitute white meats, vegetable purées and cooked fruits. Farinaceous foods prepared without fats should be added gradually. Milk should be given only in weak dilution. Normal diet may be resumed after some time. Tannin and calcium are good adjuvants to the dietary treatment, and epinephrine is efficacious.

Bulletin Médical, Paris

41: 939-958 (Aug. 20) 1927

*Surgical Treatment of Duodenal Ulcer. A. Tierny.—p. 945.

Surgical Treatment of Duodenal Ulcer.—The important indication for gastropylorectomy for duodenal ulcer, as against gastro-enterostomy, is increased hyperacidity. Gastro-enterostomy remains the operation of choice in cases of duodenal stenosis with almost normal acidity, that is, in the case of an ulcer almost completely cicatrized. In all other cases resection is preferable. Gastro-enterostomy is indicated in patients with azotemia and in the aged. Even in those with azotemia, if, some months after gastro-enterostomy, the patient does not digest well, resection of the duodenopyloric cone should be done. Gastroduodenectomy should replace gastro-enterostomy in the treatment of duodenal ulcer with hyperacidity.

Gazette des Hôpitaux, Paris

100: 1149-1164 (Aug. 31) 1927

*Serum Treatment of Tetanus. V. Audibert et al.—p. 1153.
*Primary Tubal Cancer. C. Stanca.—p. 1155.

Serum Treatment of Tetanus.—The case of severe tetanus reported by Audibert, Toinon and Guillot was treated with 20 cc. of old tetanus antiserum intraspinally and 40 cc. subcutaneously in the morning; in the evening 40 cc., with 6 Gm. of chloral hydrate, was injected intramuscularly. The injection of 100 cc. of serum and 6 Gm. of chloral hydrate per twenty-four hours was continued for two weeks. The contractures becoming worse, the patient was given an injection of 0.01 Gm. of morphine on two days, 8 Gm. of chloral hydrate per twenty-four hours and serum as before. Since the symptoms persisted, the dose of serum was increased two days later to 150 cc. Over a period of twenty-four days the patient was given in all 2,700 cc. of serum. Lumbar puncture was used only once. The patient recovered.

Primary Tubal Cancer.—According to Stanca, only 180 cases of cancer of the tubes have been reported in the literature, of which 33 per cent were primary. The prognosis as deduced from these cases is bad. The tumor in the author's case involved nearly the whole of the left tube in a circumscribed fashion. Only a small portion of the left ovary, which was in contact with the tumor, was altered by the cancerous process. The uterus was normal. With the papillomatous character of the tumor, its great size, and with the presence of cancer cells not usual in ovarian epithelial neoplasms, the tubal origin of the cancer is confirmed.

Journal des Praticiens, Paris

41: 561-576 (Aug. 27) 1927. Partial Index

Articular Manifestations of Serum Disease. F. Bezançon.—p. 561.
Chronic Synovitis of Sheath of Medius. Hartmann.—p. 563.
*Syphilitic and Parasyphilitic Duodenal and Gastric Ulcers. H. Gougerot.—p. 564.
Case of Septicemia with Hemolytic Streptococci. M. Champeaux.—p. 565.

Syphilitic and Parasyphilitic Duodenal and Gastric Ulcers.—In twenty-two out of twenty-eight cases of ulcer in families of syphilitics, antisyphilitic treatment had a remarkable effect. The ulcer seems to result from a stenosing or thrombosing arteriolitis, the nourishing blood not reaching the mucosa properly. The latter, having become ischemic, does not defend itself well; the gastric or gastroduodenal juice, especially in subjects with hyperchlorhydria, consumes the mucosa which corresponds to the vessel involved. The great cause of arteritis and arteriolitis is the spirochete. Two illustrative cases are reported. It is, of course, impossible to conclude that all ulcers are syphilitic or parasyphilitic, but it seems wise, in the presence of ulcer of the stomach or duodenum, to look for syphilis in the patient and his family, to make a Wassermann test and to continue antisyphilitic treatment for a long time, even if the Wassermann reaction is negative. Operation, except in emergency, should not be undertaken before antisyphilitic treatment.

Journal d'Urologie Médicale et Chirurgicale, Paris

24: 97-192 (Aug.) 1927

*Monkey Testicle Grafted in Man. E. Retterer.—p. 97.
Reno-Ureteral Anomalies. C. Antonucci and A. Cassuto.—p. 116.
Pyelographic Diagnosis of Horseshoe Kidney. L. A. Surraco.—p. 130.
Crossed Renal Dystopia. J. G. Gottlieb.—p. 139.

Monkey Testicle Grafted in Man.—A lawyer, aged 66 years, found that his memory was getting poor and that he became fatigued after two hours' work. He had been impotent for two years. Three months after implantation of a monkey testicle (*Cynocephalus sphinx*), his intellect, especially his memory, was greatly improved, as well as his endurance. His genital functions returned, but after twenty-eight months were decreased by one half. Although the intellect maintained its improvement, he requested a new graft. Retterer examined the old graft and concluded that the element producing the stimulating principles is the epithelium of the seminiferous tubules; general well-being lasts from three to four years, that is, until sufficient time has elapsed for the transformation of the epithelial covering into connective tissue.

Lyon Médical, Lyons

59: 205-228 (Aug. 28) 1927

*Streptococcic Bronchopneumonias. A. Dufourt and Sédallian.—p. 205.

Streptococcic Bronchopneumonias.—In streptococcic infection of the lung there is at first a large focus in the apex. A murmur and fine râles, subdulness or dulness in the infraspinous and supraspinous fossae and under the clavicle are present. After three or four days the murmur and the râles are in the middle of the lung; the base is then invaded. This creeping progress of bronchopneumonia is characteristic of streptococcic infection. The temperature curve is broken and irregular. Cultures of substances obtained by pulmonary puncture, in bouillon T or gelose-blood usually confirm the diagnosis. The child is extremely pale, owing to the hemolytic action of the streptococci; and for this reason, too, convalescence is long. The physical signs are present in the focus, even after the fever has disappeared. Nearly always when there are recurrences of bronchopneumonia within the months following the first attack, the disease is streptococcic bronchopneumonia. When five or six injections of Weill-Dufourt vaccine (pneumococci and enterococci) have failed to modify the fever, it is time to suspect some other organism, particularly the streptococcus. In treating with serum, the doses should be high; in a child under 2 years, 30 cc., between 2 and 10 years, 40 to 60 cc. daily as long as there is fever or auscultation signs are present in the foci.

59: 257-284 (Sept. 11) 1927

*Azotemia of Malignant Diphtheria. J. Chalier and A. Brochier.—p. 257.

Azotemia of Malignant Diphtheria.—In nine of twenty-two cases of diphtheria the blood urea was found increased, i. e., above 0.5 Gm. per liter. Of these nine cases, eight terminated in death. Of the other thirteen cases there were eight recoveries and five deaths, the latter due to tracheobronchial diphtheria, to ascending paralysis or to some unidentified cause. Azotemia in malignant diphtheria is a frequent manifestation and one which seems to warrant a very grave prognosis.

Paris Médical

63: 137-152 (Aug. 20) 1927

*Hemostatic Action of Sodium Citrate. I. Goia and I. Pétri.—p. 137.
Primary Amebic Cholecystitis. M. Petzetakis.—p. 143.
*Localization of Tuberculosis at Apex and Mechanism of Action of Pneumothorax. V. Mandru.—p. 146.
Influence of Acid Reaction on Virus of Chicken Sarcoma; Its Rôle in Gye's Experiments. E. Harde.—p. 148.

Hemostatic Action of Sodium Citrate.—Sodium citrate, injected into the vein in doses of from 3 to 6 Gm., causes important modifications in the blood, which should be considered symptoms of shock, following on the occurrence of colloidal disequilibrium. The hemostasis is probably facilitated at the periphery by vasoconstriction and in the splanchnic region by concentration of thrombocytes and leukocytes. The increased coagulability of the blood appears after from fifteen to twenty minutes.

Localization of Tuberculosis at Apex and Mechanism of Action of Pneumothorax.—Mandru believes the development cycle of tuberculosis to be: aerogenous tuberculous infection localized at the base of the lung in childhood, healing of the lesion if the infection has not been too intense, and latency of the bacillus in the focus or in the neighboring lymph vessels. With diminished resistance of the body, provoked by an infectious disease, chilling, overwork, insufficient food, etc., the bacillus multiplies and invades the pleura around the focus at the base, provoking, in nearly all cases, dry pleurisy of the base of the thorax between the anterior and posterior axillary lines. By the friction of the pleura the bacilli are then forced into the region of the apex. Absorbed by the visceral serosa, they provoke tuberculosis of the lung. Repeated invasion of the apex by bacilli, fallen into the pleura, may explain the acute attacks which supervene in tuberculosis of the apex. The action of pneumothorax is to separate the pleural serosae so that they can no longer rub together and push the bacilli into the region of the apex. After pneumothorax, although the patient's condition is improved, the bacilli fall into the pleural space and, not being able to travel upward, provoke the pleurisy that is often seen after this form of treatment.

Presse Médicale, Paris

35: 1049-1064 (Aug. 27) 1927

Antitoxic Rhinovaccination. C. Zoeller and G. Ramon.—p. 1049.
*Rôle of Kidney in Diabetes Mellitus. H. Chabanier et al.—p. 1050.
Impalpable Thyrotoxic Adenomas. L. Dautrebande and A. Lemort.—p. 1054.

Rôle of Kidney in Diabetes Mellitus: Mobility of Glucose Secretion Threshold.—In a given subject, the threshold of glucose secretion of the kidney varies greatly and in the same direction as the glycemia. The relations between this threshold and glycemia are qualitatively identical in all subjects. Factors producing quantitative differences are carbohydrate content of the diet and administration of insulin. A diet lacking in carbohydrates brings the threshold and the glycemia close together; one rich in carbohydrates separates them. The convergence of the threshold toward the glycemia under the influence of restriction of carbohydrates may be considered as the action of the carbohydrate content itself on the ratio of the threshold to the glycemia. Restriction of carbohydrates causes an elevation of the point of inflection of the threshold curve, i. e., the point at which it begins to diverge clearly from the curve representing variations of glycemia. It tends to close the gap presented by the two curves above the point of inflection. Inversely, diets rich in carbohydrates lower the point of inflection of the threshold curve and emphasize the gap of the curves below this point. The action of insulin cannot be attributed purely to the fall in glycemia which this medication is capable of determining. In two cases reported, convergence of the threshold was manifested for glycemias which were, after treatment with insulin, of the same value as before.

Progrès Médical, Paris

53: 1281-1328 (Aug. 20) 1927

Philosophic and Medical Evolution of Biomechanism. P. Delaunay.—p. 1289.
*Vaccine Treatment of Acute Gonococcic Urethritis. A. Demonchy and J. Lançon.—p. 1293.
Sympathetic and Endocrine Reactions of Psychoneurotics. M. Laignel-Lavastine.—p. 1301.
Tubal Pregnancy Repeated on Same Side. E. Petersen.—p. 1307.
Acute Ophthalmoplegia of Infectious Origin. M. Joltrois.—p. 1311.

Vaccine Treatment of Acute Gonococcic Urethritis.—Demonchy and Lançon treated sixty patients with acute gonococcic urethritis of not more than ten days' duration, having a thick, greenish, purulent discharge in which the microscope revealed an abundance of gonococci. They had not undergone treatment. Eight injections of vaccine into the subcutaneous tissue were given at two-day intervals, the doses increasing from 0.5 to 0.75, 1 and finally to 1.5 cc. In thirty-three primary cases there was no reaction and twenty-eight of them were cured very rapidly. In four there was a slight reaction of the prostate; the fifth dragged on for a month and a half and had one or two recurrences. Of twenty-four secondary cases, twenty were completely cured, and four had a complicating littritis.

Revue Française de Gynécologie et d'Obstét., Paris

22: 413-468 (Sept.) 1927

*Pregnancy and Cancer of Uterine Cervix. E. Hauch.—p. 413.
Myomectomy During Puerperium. G. Placintianu.—p. 421.
Treatment of Anomalies of Uterine Contracture. O. R. Lima.—p. 437.
Comas in Pregnancy. J. Olmer.—p. 442.

Pregnancy and Cancer of Uterine Cervix.—Four cases of cancer of the cervix complicated by pregnancy are described. Three patients died, the fourth was well two and a half years after operation. As treatment one may use surgery, the roentgen-ray, radium or a combination of surgery and irradiation. Hauch prefers the last. Radium therapy did not injure the child when it was used in one of his cases. Cesarean section should be done, followed by complete hysterectomy, except in cases in which the size and nature of the tumor make extensive operation impossible. In the puerperium, energetic treatment with radium and roentgen rays must be administered as soon as possible.

Schweizerische medizinische Wochenschrift, Basel

57: 829-856 (Aug. 27) 1927

Periarterial Sympathectomy on Superior Thyroid Arteries in Myxedema. F. Merke.—p. 829.
Endemic Cretinism; Endemic Myxedema. A. Oswald.—p. 834.
Goiter Statistics. C. R. Pfister.—p. 836.
Dysfunction of Endocrines. F. de Quervain.—p. 840.
Myxedema After Goiter Operations. J. L. Reverdin.—p. 841.
Epinephrine Reaction of Heart in Exophthalmic Goiter. O. Roth.—p. 842.
*Combating Goiter in Switzerland by Iodine. W. Silberschmidt.—p. 845.
*Influence of Iodine on Milk Secretion. O. Stiner.—p. 846.
Goiter: Animal Experiments. C. Wegelin.—p. 848.
Congenital Goiter. E. Wieland.—p. 850.
Intrathoracic Goiter; Classification and Operation. H. Matti.—p. 852.

Combating Goiter in Switzerland by Iodine.—In Switzerland, cases of injury from use of iodized cooking salt were found by Silberschmidt to be very few in number. The salt used contains less than one third of the iodine content of that used in Bordeaux. In Zurich, the purchase of iodized salt depends on the choice of the customer.

Influence of Iodine on Milk Secretion.—Cows given 1 mg. of iodine per day gave more milk in the evening than in the morning. This is the reverse of what is usually observed. The iodine was given mixed with the fodder, after the morning milking. Thus the milk glands were stimulated during the day and showed the effect in the evening milking. When the iodine was given in the evening, the quantity of morning milk was greater. Stiner treated a herd of goats with

agalactia by means of a diet rich in vitamins as well as with small amounts of iodine (about 3 mg. a day) and small doses of arsenic. The animals recovered entirely in from four to six weeks. No untoward results followed the prolonged use of iodized salt in cows. In experiments with milch cows at the soldiers' farm, 10 Gm. of iodized cooking salt was used (0.5 Gm. of potassium iodide to 100,000 Gm. of cooking salt). Milk production in the cows thus treated was greater than in those receiving plain salt. The quality of the milk also was improved. Animals receiving the iodine were regularly impregnated with one covering, while in the others several coverings were required. The number of calves per iodized cow was 1.0, per control cow 0.7, in 1924; 1.0 and 0.6, respectively, in 1925. A comparison of the effects of an organic compound with those of two inorganic salts showed the former to be superior.

Gazzetta degli Ospedali e delle Cliniche, Milan

48: 817-840 (Aug. 28) 1927

Abdominal Cystic Pneumatosis. L. Lazzarini.—p. 817.
*Arsenic in Malaria. P. Castagna.—p. 821.

Chlorarsenol in Treatment of Malarial and Postinfectious Anemia.—According to Castagna, solarson proves of great value in the treatment of oligemia following malaria and other infections, such as pneumonia and typhoid and hemorrhage following abortion. It increases not only the number of erythrocytes, but also the hemoglobin percentage and the number of lymphocytes. The general condition and weight improve simultaneously. From 1 to 2 cc. of a 1 per cent solution of the drug is injected subcutaneously into the thigh every day. The course embraces from twelve to fifteen injections and may be repeated after an eight-day interval. No reactions were observed. A series of eighteen cases is reported.

Pediatria, Naples

35: 801-856 (Aug. 1) 1927

*Measles Virus. M. Guardabassi.—p. 801.
Craniotabes. U. De Gironcoli.—p. 819.
Fungoid Mycosis in Nurse. A. F. Canelli.—p. 832.
Influenzal Meningitis. M. Gerbasi.—p. 842.
Torsion of Mesenteric Peduncle. F. Rolando.—p. 848.

The Measles Virus.—From a review of the literature, especially Italian, and his experiments on guinea-pigs and rabbits, Guardabassi defines the measles virus as being amotile, filtrable, gram-negative granular formations, from 0.4 to 0.6 micron long, which stain pink by the Giemsa method. They grow best in concentrated broth plus ascitic fluid, p_H 7.2, under petrolatum. These forms may be analogous to some of Caronia's cultures and also to some other filtrable viruses, such as Amato's, Castelli's and Sangiorgi's. Guardabassi believes that he produced specific measles lesions in the respiratory and vascular system by inoculation of his virus.

Policlinico, Rome

34: 1207-1242 (Aug. 22) 1927. Practical Section

Arsphenamine Accidents. L. De Benedetti.—p. 1207.
*Whooping Cough Vaccine. G. Blasi.—p. 1217.

Comparative Results of Vaccine Therapy in Whooping Cough.—For purposes of comparison, Blasi treated fifty-two cases of whooping cough with vaccine and 250 by the usual methods. Patients treated with vaccine (from four to eight injections) recovered in a relatively short period (eight to sixteen days), while in the others, the disease lasted from three to five months.

34: 397-444 (Sept. 15) 1927. Surgical Section

*Acidosis in Urology. G. Albano and A. Vecchiarelli.—p. 397.
Renal Cysts. A. Manna.—p. 410. C'td.
Femoral Fractures. L. Rongoni.—p. 421.
Renal Tumors in Infants. A. Violato.—p. 428.

Acidosis Index in Urology.—The alveolar carbon dioxide tension index has a high place, state Albano and Vecchiarelli, among functional urologic tests. Its values parallel those of the other tests and especially those for azotemia. There is a certain relation between the seriousness of the case and the acid-base disequilibrium (decreased carbon dioxide pressure). As this sign is more sensitive than azotemia, it might be preferable for ruling out extrarenal factors. When the two tests disagree, the acidosis index seems to come closer to actual conditions.

Anales del Hosp. de la Sta. Cruz y S. Pablo, Barcelona

1: 197-239 (July 15) 1927. Partial Index

Fractures of Extremities. L. Bosch Avilés.—p. 197.
Clinical Refractometry. F. Coma y Roca.—p. 203.
*Postoperative Pulmonary Sequelae. M. Corachán, J. Pi y Figueras and J. Trueta.—p. 207.

Autohemotherapy in Postoperative Pulmonary Complications.—Corachán and his associates relied on autohemotherapy to arrest the course of bronchial and pulmonary complications following surgical operations on the stomach and elsewhere. Of eighteen patients, only one, with gastric cancer, died from bronchopneumonia. The amount of blood injected is usually from 25 to 30 cc., taken from the patient's elbow. In some cases, as much as 50 cc. was injected. Hemolizing, citration or anticoagulation is not attempted. The improvement is generally almost immediate.

Archivos de Biologia, Sãu Paulo

11: 121-144 (June) 1927

*Typhoid Inoculation. E. Bertarelli.—p. 121.

Oral Vaccination Against Typhoid on Large Scale.—At São Paulo, during a severe typhoid outbreak in 1925, there was opportunity to test the value of oral inoculation against the disease. Of about 50,000 persons vaccinated, the oral method was used in 23,000. Bertarelli states that there were seventy-two cases of typhoid among those vaccinated. In fifty-one of these patients the subcutaneous method had been chosen, in fifteen the oral route, in one, both, and in five information on this point was lacking.

Archivos de Endocrinología y Nutricion, Madrid

5: 49-96 (March-April) 1927

*Epinephrine in Hyperthyroidism. Micó.—p. 49.
Endocrinology. J. M. Alberdi y Goñi.—p. 82. C'cn.

Epinephrine Test for Latent Hyperthyroidism.—Micó claims that his test—subcutaneous injection of 0.5 mg. of 1 per thousand epinephrine hydrochloride—differs from that of Goetsch, as it depends exclusively on the subsequent effect on basal metabolism. The injection causes a slight increase in the metabolic rate in normal persons, hardly any change in patients with hypothyroidism and a marked rise, over 30 per cent, in those with hyperthyroidism. The chief value of the test is seen, however, in cases of latent hyperthyroidism with a vague clinical picture, as the suddenly increased metabolic rate has then a true diagnostic value. The test is also valuable to control the results of treatment.

Arch. Lat.-Amer. de Pediatría, Buenos Aires

21: 467-538 (July) 1927

Cerebellar Cyst in Child. R. A. Rivarola.—p. 467.
Primary Pulmonary Sarcoma in Children. A. Segers and R. S. Aguirre.—p. 473.
*Meningococcic Septicemia. F. Bazán and J. C. Derqui.—p. 486.
*Anterior Poliomyelitis and Diphtheria. A. Carrau.—p. 495.
Atypical Poliomyelitis. J. M. Estapé.—p. 502.
*Typhoid Meningitis. M. A. Jáureguy.—p. 506.

Meningococcic Septicemia.—In a boy, aged 13, seen by Bazán and Derqui, the symptoms were constitutional and septic rather than meningeal. The spinal fluid did not yield the meningococcus until fourteen days after admittance, one day after an injection of antimeningococcic serum and about two and a half months after the onset of the condition. Blood cultures were negative. Throughout almost the entire course the spinal fluid contained Widal's "preserved aseptic puriform" polymorphonuclears.

Infantile Paralysis and Diphtheria.—Diphtheritic paralysis may often mimic poliomyelitis. The coincidence of both diseases in epidemic form in Montevideo resulted in some curious combinations. Carrau reports three cases in infants, aged from 2 to 12 months. In the first case, a girl with poliomyelitis developed diphtheria complicated with polineuritis and palatine paralysis. A painful flaccid paralysis followed in the second case and in the third coincided with diphtheria. In children under 3 years old the differential

diagnosis is very difficult, and occasionally neither the clinical nor the laboratory findings are able to solve the problem.

Typhoid Meningitis.—Out of seventy-two cases of typhoid in children, in only three was the typhoid bacillus found in the spinal fluid. Of the three, in only one was the clinical picture typical of cerebrospinal meningitis. In view of the danger of the method and the inconstant results, Jáureguy believes that spinal puncture is not justified in the diagnosis of typhoid in children.

Revista de la Soc. Arg. de Biología, Buenos Aires

3: 347-453 (June) 1927. Partial Index

Avitaminosis B in Suprarenalectomized Rats. O. Pico Estrada.—p. 347.
Retinal Circulation. E. P. Fortin.—p. 353.
Biologic Reagent for Epinephrine. B. A. Houssay and E. A. Molinelli. —p. 362.
*Spleen and Leukocytes. G. Viale and A. A. Bruno.—p. 437.
*Spleen and Erythrocytes. G. Viale and J. Di Leo Lira.—p. 440.

Spleen and Regulation of Leukocytes.—Electrical stimulation of the spleen in dogs caused a rapid leukopenia both in the blood of the splenic vein and in the general circulation. Digestive leukocytosis occurred after removal of the spleen.

Rôle of Spleen in Altitude.—Both aviators and mountain climbers exhibit a transient erythrocythemia, which becomes permanent in persons living in high regions. Viale and Di Leo Lira found in dogs that this hypercythemia does not occur after removal of the spleen, even when the animal is placed in a rarefied atmosphere. The spleen is, then, the structure enabling man to adapt himself to the changes in atmospheric pressure.

Siglo Médico, Madrid

80: 197-220 (Aug. 27) 1927

*Addison's Disease. G. Marañón and J. Morros Sardá.—p. 197.
Diagnosis of Death. R. Royo-Villanova y Morales.—p. 198.

Acid-Base Balance in Addison's Disease.—Marañón and Morros studied the acid-base equilibrium in six patients with Addison's disease. In four, a definite lowering of the alkali reserve was found. In the other two the figures were within normal limits, but leaning toward decreased alkalinity. The degree of the acidosis seems proportional to the severity of the disease. An alkaline therapy is now being tried in such patients, especially those with evident acidosis. Insulin should not be used except with plenty of sugar, as these patients are extremely sensitive to the hormone.

Vida Nueva, Havana

20: 53-126 (Aug. 15) 1927

*Appendicular Abscess. R. Núñez Portuondo.—p. 53.
*Gastrectomy. J. S. Lastra.—p. 59.
Treatment of Puerperal Infection. N. Gómez de Rosas.—p. 68.
Congenital Hereditary Rectal Prolapse. J. R. Muñiz.—p. 77.
Case of Local Amyloid Infiltration. Puente Duany and I. Espinosa. —p. 86.

Treatment of Appendicular Abscess.—From a surgical standpoint, Núñez suggests the division of cases of appendicular abscess into two groups according to the involvement or noninvolvement of the anterior abdominal wall. He describes methods of operation for each group and publishes a large number of diagrams illustrating the procedures suggested.

Important Factors in Gastrectomy.—From an experience of about 100 cases of partial gastrectomy, Lastra emphasizes the necessity of adequate approach and of insuring the best possible nutrition to the stump. Subcutaneous infusion of glucose solution is the best method of supplying fluid. Murphy's rectal drip does not permit sufficient absorption.

Archiv für klinische Chirurgie, Berlin

147: 1-198 (Aug. 6) 1927

Blood Vessel Reactions of Frog. G. Magnus.—p. 1.
*Twenty-Five Years of Operative Treatment of Gastric and Duodenal Ulcer. F. Starlinger.—p. 8.
Inflammatory and Toxic Factors in Pathogenesis of Gastric and Duodenal Ulcer. H. Naumann.—p. 66.
Three Cases of Diseased Hypoplastic Kidney: Calculus, Tuberculosis, Gonorrhea. F. Suter.—p. 124.
Arthrodesis of Ankle Joint. A. Gottesleben.—p. 137.
*Occurrence of Sarcoma After War Injuries. E. Melzner.—p. 153.
Malignant Tumors of Jaw. E. Risak.—p. 162.
Pulsating Abscesses of Chest Caused by Bronchial Gland Tuberculosis. I. M. Irger.—p. 176.
Treatment of Esophageal Injuries. H. Salzer.—p. 182.
Wandering Gallbladder and Its Torsion. Esau.—p. 192.
Cancer of Renal Pelvis in Calculous Pus Kidney. Esau.—p. 195.
Removal of Vocal Cords in Dog. A. Nussbaum.—p. 198.

Twenty-Five Years of Operative Treatment of Gastric and Duodenal Ulcer.—Starlinger reviews Ranzi's gastric material from 1902 to 1926. In all there were 562 cases operated on in his Vienna clinic and later in the Innsbruck clinic. A group of sixty-five duodenal ulcers treated by resection gave a mortality of 3.1 per cent, while 161 duodenal ulcers treated by conservative methods gave a mortality of 3.7 per cent. In eighteen cases of perforation treated by resection, the mortality amounted to 16.7 per cent, while in eight cases treated by anterior gastro-enterostomy the mortality was 25 per cent. Comparison of the results obtained with the radical and the conservative methods shows that radically treated cases improved as time went on, whereas the conservative group showed a tendency to get worse. The proportion of reoperations required for immediate postoperative complications was about the same in both groups, whereas in a later period the percentage of reoperations in the radical group was to that in the conservative group as 4 to 7. As regards marginal peptic ulcer, the two groups were represented, respectively, in the proportion 1:7. In summing up, it was found that twice as many cases came to reoperation from the conservative group as from the radical. The general mortality was about the same in both groups, 6.9 for the radical and 6.6 for the conservative. A follow-up study was made of 250 cases. Of these, 113 were treated by resection and 137 by anterior gastro-enterostomy. Twenty-seven patients (10 per cent) were not cured. In the radical group there were 4.4 per cent of failures, and in the conservative 16.1 per cent. The following deductions were made: Resection should be given preference over conservative methods. In threatened perforations, one should wait for the quiescent stage. Drainage is to be avoided. Perforations are best treated by resection, unless the patient's condition is poor, in which case the suturing of the perforation is to be supplemented by a gastro-enterostomy. Sleeve resection should be abandoned, the best methods thus far evolved are Billroth I and Billroth II. In the treatment of duodenal ulcer, resection whenever possible is urged. The operation of pyloric exclusion is to be condemned. When resection is not feasible, an antecolic gastro-enterostomy with an entero-anastomosis is preferred.

Occurrence of Sarcoma After War Injuries.—Melzner states that experimental work has failed to establish a relationship between trauma and sarcoma. The injuries of the last war have given rise to very few sarcomas. On the other hand, numerous clinical cases have been reported in which the relationship cannot be denied. They suggest the possibility that in specially predisposed individuals trauma may serve as the determining factor. He reports the case of a man who sustained a war injury to the left thigh. The limb had to be amputated eleven years later because of a fibrosarcoma which had developed at the exact site of the injury.

Beiträge zur klinischen Chirurgie, Berlin

140: 167-372, 1927

Gangrene of Extremities. F. Neugebauer.—p. 167.
Gangrene of Extremities Caused by Subcutaneous Rupture of Blood Vessels. H. Gregora.—p. 199.
Gangrene of Foot. M. Weiss.—p. 211.
*Necrotic Skin Inflammations. A. Most.—p. 213.
Results with Brüning-Leriche Operation. H. Kment.—p. 220.
Injuries and Traumatic Lesions of Wrist Joint. S. Weil.—p. 230.
Conservative Treatment of Fractures of Navicular Bone of Wrist. E. Gold.—p. 251.
*Results of Operative Treatment of Gastric and Duodenal Ulcers. R. Pamperl and F. Schwarz.—p. 259.
Volvulus of Stomach. E. Breitkopf.—p. 297.
*Agastria. W. Linhart.—p. 305.
Invagination Ileus Following a Posterior Gastro-Enterostomy. J. Losert. —p. 308.
Retroperitoneal Rupture of Duodenum. F. Rudofsky.—p. 314.
Future of Surgery of Liver. A. Tietze.—p. 320.
Diagnostic Value of Cholecystography. Pawlowski.—p. 327.
Normal Gallbladder in Cholecystography. W. Meisezahl.—p. 330.
Ascaris Infestation of Bile Ducts. F. Neugebauer.—p. 332.
Autohemotherapy of Postoperative Pulmonary Complications. F. Schwarz. —p. 338.

Surgery of Cavities in Lung. H. Hauke.—p. 343.
Iodine Test in Brain and Spinal Cord Surgery. L. Heidrich.—p. 345.
Tumor of Cerebellum. F. Pendl and J. Reinhold.—p. 353.
Premature Ossification of Sutures. A. Materna.—p. 358.
Urethral Strictures. W. Hirt.—p. 366.
Inflammatory Tumors of Omentum. K. Gütig.—p. 370.

Necrotic Inflammation of Skin.—Most describes three cases of spreading phlegmon of the skin. The first two were in women and were apparently kept up by self-inflicted injury. These cases were undoubtedly on an hysterical basis. Application of a plaster cast to the effected forearm in one case rapidly led to complete healing. In the third case, four weeks after incision of a retroperitoneal colon bacillus abscess of appendiceal origin, there developed a spreading phlegmon of the abdominal wall. It resisted all therapeutic measures and involved most of the abdominal area. The patient died of exhaustion within three months. Cultures did not show diphtheria bacilli nor colon bacilli; a variety of staphylococcus was found. This is a very rare though well known type of spreading phlegmon.

Results of Operative Treatment of Gastric and Duodenal Ulcers.—Pamperl and Schwarz analyze the results obtained in 637 cases of gastric or duodenal ulcer operated on in Schloffer's clinic (Prague). There were 399 gastro-enterostomies and 238 resections. This series included cases of bleeding and perforation. The main purpose of the study was to compare the two methods. The authors lean toward gastro-enterostomy as the method of choice for duodenal and prepyloric ulcers. They have obtained good results with it in large callous ulcers of the body of the stomach, though they admit that resection offers a better chance for cure in this type of case. Gastro-enterostomy yields best results in cases with hyperacidity or normal acidity. They have had only two cases of peptic jejunal ulcer, in spite of the fact that they practiced pyloric occlusion in most of their cases, and employed silk for the sutures of the inner coats. They preferred a posterior retrocolic gastro-enterostomy with the shortest possible jejunal coil, and a very wide stoma. They have not seen a single case of malignant degeneration of the remaining ulcer, nor one of perforation. The mortality in both series was 10 per cent, though the grave cases were, of course, subjected to a gastro-enterostomy rather than to resection. In view of their experience, they cannot agree with the opponents of gastro-enterostomy.

Agastria.—Linhart describes a case of total absence of the stomach in a woman, aged 30. She was subjected to gastro-intestinal radiography because of abdominal symptoms developing three weeks after an appendectomy. The opaque meal passed through the esophagus and to the right, where it filled out a rounded structure. A roentgenogram taken six hours later showed that the colon occupied the embryonic site and ran diagonally across the abdomen. Volvulus of the stomach was suspected. Laparotomy showed the structure on the right side to be an enormously dilated duodenum. This was followed up to its passage through the diaphragm. There was no stomach. Dilatation of the duodenum was apparently due to arteriomesenteric occlusion. He did not find another case of this kind in the literature.

Deutsche med. Wochenschrift, Berlin

53: 1457-1498 (Aug. 26) 1927

Guarantees of Normal Heart-Beat. E. von Skramlik.—p. 1457.
Varying Durations of Pregnancy. A. Heyn.—p. 1460.
Psychotherapy in Bronchial Asthma. K. Hansen.—p. 1462.
*Basal Metabolism and Active Tuberculosis. R. Ahlenstiel.—p. 1464.
Technic for Taking Electrocardiograms. W. Bier.—p. 1466.
Synthalin Therapy. P. Zadik.—p. 1470.
Treatment of Prostatitis. O. Nast.—p. 1472.
Yoghurt and Kefir. W. Christiansen.—p. 1473.
Perforation of Aorta into Superior Vena Cava. L. Guttmann.—p. 1473.
Eyeglasses for the Surgeon. W. Gross.—p. 1474.
New Suspensory. H. Schreus.—p. 1474.

Relation Between Basal Metabolism and Activity in Tuberculosis.—In some cases of pulmonary tuberculosis with slight activity, in which the usual physical methods fail, Ahlenstiel found that the oxygen consumption during rest is raised after injection of threshold doses of old tuberculin. These cases are for the most part identical with those in which there is, according to Grafe-Reinwein, an acceleration of the blood sedimentation; in some cases increase of metabolism is the better test; in others acceleration of sedimentation. If other diseases may be excluded, the combination of both methods is valuable in establishing activity.

Mitteil. a. d. Grenzgeb. der Med. und Chir., Jena

40: 439-582, 1927

Bronchoscopic Treatment of Lung Suppuration. E. Suchanek.—p. 439.
Salivary Glands and Internal Secretion. C. Römer.—p. 465.
Localization of Cardia. L. Reich.—p. 481.
Electrocardiographic Studies in Surgery. H. Reissinger.—p. 504.
Disturbance of Acid-Alkali Balance in Certain Surgical Conditions. A. Váňa.—p. 514.
*Total Gastrectomy for Cancer. A. Troell, G. Losell and E. Karlmark.—p. 542.
Hydrogen Ion Concentration in Thyroid Sections. A. Troell and B. Josephson.—p. 550.
*Buffer Therapy. E. Schneider.—p. 564.

Total Gastrectomy for Cancer.—The authors report the case of a man, aged 47, on whom they performed total gastrectomy because of advanced cancer of the stomach. He received a 5 per cent solution of glucose subcutaneously and per rectum for the first five days after the operation; later, nourishment was given by mouth. He tolerated food very well, gained in weight, and was able to resume his work. Careful chemical studies in absorption on a mixed diet, carried out six weeks after operation, showed that in spite of the absence of the stomach he utilized albumen, fat and carbohydrates in an entirely normal manner. It was interesting to note that the absence of hydrochloric acid in the duodenum did not interfere with normal secretion of bile and pancreatic juice.

Outlook in Intravenous Buffer Therapy.—Schneider injected so-called buffer substances intravenously into rabbits and dogs in an attempt to raise the p_H of an infected area. Sodium bicarbonate, in 4 per cent solution or sodium phosphate, in isotonic solution, was used. He failed to observe any worthwhile influence. Attempts at local measures with the same object in view can have only a limited value. It is possible, however, by means of these solutions to influence the albumin-globulin content of the blood serum so as to produce a favorable effect on severe clinical conditions. He emphasizes the warning of Gaza and Brandi that phosphatic preparations should be used in isotonic solutions only.

Monatschr. f. Geb. u. Gynäkologie, Berlin

77: 77-152 (Sept.) 1927

Etiology of High Position in Contracted Pelvis. P. Schumacher.—p. 77.
*Spontaneous Rupture of Uterus. C. Doerffer.—p. 84.
*Incomplete Rupture of Uterus. H. Baumm.—p. 93.
*Early Cesarean Section. W. Zangemeister.—p. 100.
*Tubal Pregnancy. E. Puppel.—p. 102.
Milk in Breasts of New-Born Infants. H. Hoeland.—p. 114.
Mental Diseases of Women. J. S. Galant.—p. 121.

Spontaneous Rupture of Uterus.—Three cases of rupture of the uterus are reported by Doerffer. Two took place during the first stage of labor, one at the end of the second stage. In one case thinning of the uterine wall from three previous interventions for abortion was the probable cause. In another, the cause is seen in injury to the wall from manual separation of the placenta at the previous birth. This woman had borne nine children in rapid succession and this also may have weakened the muscle. In the remaining case, a cause for the rupture could not be assigned. In all these patients, the accident, which occurred without warning, resulted in death.

Incomplete Rupture of Uterus.—Baumm describes three cases, two of which ended fatally. One patient had experienced nine normal deliveries; one, five normal and three premature; one, four normal. Incomplete ruptures are much rarer than complete ruptures, and usually occur from violence (version, etc.). Diagnosis is difficult. The contractions may not stop, and shock may not occur. The external bleeding is usually greater than in complete rupture and constitutes the chief danger. Baumm advocates exploratory laparotomy, whether or not the child has been born. After difficult versions, extractions, forceps operations, perforations, embryotomies, etc., if the least suspicion of rupture exists, the uterus should be examined with the hand; a sound is useless. Vaginal methods of treatment (by tamponade of the uterus, suture of the tear or vaginal hysterectomy) are not to be

considered. The general practitioner, faced with such an emergency, should attempt to check the bleeding by pressure from above and by packing the vagina (not the cervix) and should get the woman to the hospital as quickly as possible.

Early Cesarean Section.—Zangemeister believes in performing cesarean section at or even before the onset of labor. To provide for the escape of the lochia, etc., in cases in which the cervix is still closed, he has constructed a dilator in the shape of a posthorn, which is introduced from above.

Etiology of Tubal Pregnancy.—In the etiology of tubal pregnancy, Puppel attaches importance to healed appendicitis, to puerperal diseases, to abortion and attempts at abortion and to the intra-uterine pessary. He is skeptical as to the preponderating importance of gonorrhea.

Zeitschrift für Geb. und Gynäkologie, Stuttgart

91: 483-707 (Sept. 9) 1927

Changes in Pituitary of Rat After Surgical and Roentgen-Ray Castration. F. Schenk.—p. 483.
Diagnosis of Adenofibrosis Vaginalis Fornicalis. H. Hinselmann.—p. 498.
Measurement of Pelvis with Roentgen Ray. H. Martius.—p. 504.
Composition of Organs of Pregnant Dogs. H. R. Schmit et al.—pp. 527 and 555.
*Circulation in Pregnancy and Puerperium. W. Haupt.—p. 577.
Fetal Heart Tones and Amniotic Fluid. Lönne.—p. 592.
Anti-Inflammatory Action of Calcium in Pregnancy. W. Odenthal.—p. 595.
*Electricity in Resuscitation of Asphyxiated New-Born Infants. F. Israel.—p. 602.
Peptonizing Bacteria as Cause of Repeated Arterial Hemorrhage in Late Puerperium? G. Wendel.—p. 622.
*Lobar Pneumonia of New-Born Infants. A. Lauche.—p. 627.
Congenital Atresia of Small Intestines. T. Naegeli.—p. 635.
*Induction of Labor After Term. F. Seisser.—p. 639.
Premature Rupture of Membranes. F. Klee.—p. 645.
Wheal Reaction of Latent Edema in Pregnancy. P. Obladen.—p. 651.
Measurement of Uterine Contractions; Influence of Pituitary Solution on Menstruation. H. Schröder.—p. 653.

Circulation in Pregnancy and in Puerperium.—Haupt determined the minute volume and also the work of the heart, resting, in a number of healthy women at the end of pregnancy and in the puerperium. After labor the values were distinctly lower than before labor. The oxygen consumption per liter of blood was, on the other hand, usually higher in the puerperium. The total oxygen metabolism—not to be confused with the actual basal metabolism—fell in the puerperium. Variations in the output of the heart frequently paralleled those of the minute value.

Resuscitation of New-Born Infants with the Aid of the Electric Current.—The electric current as a means of producing respiratory movements in children born asphyxiated is, in Israel's opinion, unjustly neglected. The method was first suggested nearly 150 years ago. Israel discusses the history of its use and describes animal experiments in which he investigated the effects of currents of various intensities applied to the diaphragm or to the phrenic nerve in asphyxia and in various stages of respiration. He also reports three clinical cases in which the faradic current proved successful after other methods of starting respiration had failed. He believes that it acts on the respiratory center as well as on the muscles of the thorax. It is harmless to the child, but its strength should always be first tested on the operator. In this method the child is spared all violence.

Lobar Pneumonia in the New-Born.—Lauche has collected from the literature nine certain cases. In all the mother also had lobar pneumonia, and in all the pneumococcus was the exciting organism. In many pleuritis accompanied the pneumonia. Lobar pneumonia is extremely rare during the first year of life. Lauche regards it as a very energetic defense reaction and is inclined to believe that a partial immunization is a preliminary condition. He suggests that in lobar pneumonia in the new-born the child has received a passive immunization from the mother through the placenta and, after birth, through the breast milk.

Induction of Labor After Term.—Thirty-five cases in which labor was induced by the metreurynter are analyzed by Seisser. In twenty-six the indications were merely delay in the starting of the birth process or a large sized child at the normal end of pregnancy. In none of the cases had the mother habitually carried her children beyond term. The maximum length of the pregnancy was 306 days. A pig's bladder with capacity of from 400 to 700 cc. was used. It was filled half or two thirds full with sterile water, sodium chloride or a disinfectant, not with glycerin. The membranes were systematically ruptured before its insertion. Its use was followed in four of his cases by prolapse of the cord and in two by deflection of the head. Two children died. The puerperal morbidity was nil. The mishaps were not necessarily attributable to the metreurysis, but he does not consider this a trivial procedure and advocates a conservative attitude. In length most of these children were from 51 to 57 cc. but only three weighed more than 4,000 Gm. The average circumference of the head, fronto-occipital, was 35.6 cm.; suboccipito-bregmatic, 33.4 cm. The average shoulder circumference was 35.9. He believes that in many of these cases it would have been safe to wait for spontaneous birth.

Zeitschrift für Tuberkulose, Leipzig

48: 433-512 (Aug.) 1927

Microhistochemical Gold Reaction in Organs of Animals Dead from Tuberculosis After Sanocrysin Administration. J. A. Gallinal.—p. 433.
Infections of Apex of Lung of Pleural Origin. D. Reinders.—p. 443.
Case of Severe Chronic Tuberculous Arthritis. E. Ruescher.—p. 448.
Tuberculosis, Itinerants and Vagabonds. F. Reichardt.—p. 452.
*Lipolytic Blood Ferment, Lymphocytes, and Pirquet's Reaction. N. Gegetchkori.—p. 460.
Mineral Salts and Phosphorus in Tuberculosis. Rückle.—p. 462.
Complement Deviation in Tuberculosis with Simplified Antigen. A. Salomon.—p. 467.

Lipolytic Blood Ferment, Lymphocytes and Pirquet Reaction.—The quantity of lipolytic ferments suddenly diminishes in cases of exudative tuberculosis. In the productive forms Pirquet's reaction is distinct, a condition of allergy is observed; in the exudative forms the reaction is weak and often anergy is observed. The productive forms show lymphocytosis, the exudative forms show decrease in the number of lymphocytes. The amount of lipolytic ferment, on the one hand, lymphocytosis and the Pirquet reaction on the other should indicate the progress of the disease in the majority of cases. Blood examinations were made on eight healthy and thirty-six tuberculous subjects in different stages of the disease. Lipase was determined by Hanriot's method. The lipolytic quotient of the healthy amounted to from 12 to 13; in severe cases of tuberculosis, in exudative forms, this quotient falls to 6, even to 3. Sudden diminution of the quotient bespeaks a bad outcome. The Pirquet test was made at the same time as the determination of the lipolytic quotient.

Zentralbl. f. Chirurgie, Leipzig

54: 2049-2112 (Aug. 13) 1927

Sparing the Parathyroids. E. Borchers.—p. 2050.
Operative Intervention in Jaundice of Pregnancy. P. Rissmann.—p. 2051.
Treatment of Luxation of Os Naviculare Pedis. J. Gangler.—p. 2054.
Modelling Osteotomy After Perthes. W. Baltisberger and J. Porst.—p. 2058.
*Heart Block After Strumectomies. E. Simon.—p. 2060.
Injuries of Internal Ligament of Knee Joint. M. Katzenstein.—p. 2066.
Operative Treatment of Rectal Prolapse in Children. S. Frey.—p. 2072.
Muscle Contraction Symptom in Tuberculous Spondylitis. P. G. Kornew.—p. 2073.
Intra-Abdominal Ovarian Hemorrhage During Menstruation. W. Gross.—p. 2075.
Results of Radical Operation for Cancer of Bile Ducts. W. Körte.—p. 2076.

Heart Block After Strumectomies.—The effect of increased thyroid secretion on the heart is well known. Auricular fibrillation may develop for the first time following strumectomy. Injury to the vagus as a cause of postoperative cardiac disturbances is rare, but possible. In large goiters, in malignancy of the gland, and in rare cases of anatomic anomaly in which the vagus lies outside of the carotid sheath, the nerve may be involved in the pathologic process. Characteristic signs are slow pulse, superficial respiration, cough, and complete dissociation of heart action, heart block. In his own case, the goiter was very large. Cardiac stimulants failed utterly to relieve the urgent symptoms. Relief was obtained through the administration of 2 mg. of atropine three times daily.

54: 2177-2280 (Aug. 27) 1927

*Causes of Death Following Operation. G. Petrén.—p. 2179.
Results of Transpleural Operations for Cancer of Esophagus. O. Löfberg.—p. 2184.

Modification of Girard's Invagination Operation for Diverticuli of Esophagus. P. Lengemann.—p. 2189.
*Embolectomy in Functional Disturbances of Embolic Origin in Extremities. E. Key.—p. 2190.
Trophic Disturbances from Arterial Thrombosis in Extremities. W. Löhr.—p. 2199.
Combined Method of Radical Operation for Prostatic Cancer. E. Tengvall.—p. 2209.
Epiphyseal Necrosis in Healed Fractures of Neck of Femur. S. Johansson.—p. 2214.
Treatment of Fractures of Neck of Femur. O. Löfberg.—p. 2222.

Causes of Deaths Following Operation.—In reviewing postoperative fatalities of the Lund surgical clinic for the past five years, Petrén comes to the following conclusions: The general mortality can be reduced by teaching the general practitioner the prognostic importance of early diagnosis and timely surgical intervention. On the other hand, such factors as insufficient indications, insufficient operations, and certain postoperative complications depend on the experience, knowledge and resourcefulness of the individual surgeon. He sees much promise in the improved methods of preoperative research into the function of the various organs and of physiologic studies of metabolic disturbances in certain groups of cases. The gloomiest outlook is presented by pulmonary complications. They constitute a veritable stumbling block in surgical practice.

Embolectomy as Method of Treatment in Functional Disturbances of Embolic Origin in Extremities.—Einar Key of Stockholm sees a widening field for embolectomy. Localization of an embolus may be difficult. Disappearance of the pulse in the involved artery is the most helpful point in this regard. These operations should be performed under local anesthesia. He employed Carrell's technic, moistening his instruments and his silk with petrolatum and a solution of sodium citrate. It is futile to operate later than forty-eight hours after the onset of symptoms. The best results were obtained in cases in which operation was done within the first ten hours. In this group good results were obtained in three-fourths of the cases with localization in the axillary and the brachial arteries, in one half of the cases with localization in the femoral artery, in one third of the cases with localization in the iliac artery, and in one seventh of those with the embolus in the aorta. In the absence of a contraindication the operation is indicated when an embolus produces severe circulatory disturbances in an upper or lower extremity.

Zentralbl. f. Gynäkologie, Leipzig

51: 2201-2264 (Aug. 27) 1927

*Adenomyosis of Umbilicus. R. Köhler.—p. 2201.
Floating Tuberculous Pyosalpinx. B. Waser.—p. 2210.
Vaginal or Abdominal Methods in Operative Obstetrics? M. Hirsch.—p. 2215.
Gwathmey's Analgesia. E. Kahn.—p. 2226.
Symmetrical Bilateral Fracture of Shaft of Femur in Infants Born Spontaneously. Murken.—p. 2236.
Large Uterine Cysts. K. Fukushima.—p. 2238.

Adenomyosis of Umbilicus.—Köhler describes a typical case—the thirty-second in the literature—with brownish discharge from the navel and increase in size and hardness of the tumor in the premenstrual period, causing severe pain. On excision, it was found that not even a thin strand (such as has been described by other authors) connected the tumor with the peritoneum. Microphotographs of the tumor are reproduced. Köhler inclines to the theory that these tumors originate in true uterine gland tissue, transported by the lymph stream.

51: 2265-2328 (Sept. 3) 1927

*Influence of Pregnancy on Growth of Cancer of Uterus. H. Katz.—p. 2267.
*Lactic Acid Content of Blood During Pregnancy. H. Kienlin.—p. 2271.
Hemorrhage from Corpus Luteum, Threatening life. M. Oing.—p. 2273.
Legal Status of Eugenic Abortion. R. Schaeffer.—p. 2278.
Trophoedema Chronicum Faciei and Menstruation. A. F. Slatmann.—p. 2279.
Thimble Curet. K. Blond.—p. 2283.
Forceps for Introducing Metreurynter. P. Beck.—p. 2286.

Influence of Pregnancy on Growth of Cancer of Uterus.—In a case of lesion of the cervix, reported by Katz, microscopic examination of tissue obtained by biopsy showed solid carcinoma of medium or advanced maturity, already starting to break into the lymph channels. The woman disappeared. Ten months later she again presented herself. She was now four months pregnant. Spontaneous abortion took place on the day of admission. Hysterectomy was performed. The carcinoma had apparently made no important progress. Three years after the operation, the woman, who was 31 years old at the time of the first examination, is well. Katz' conclusion is that in some cases pregnancy may leave a uterine carcinoma uninfluenced or even check its growth.

Lactic Acid Content of Blood in Pregnancy.—Examinations in six cases, with both the colorimetric and the titration methods, indicate that lactic acid is not increased in the blood as the result of pregnancy, pregnancy kidney or the preeclamptic state. The increase noted with severe labor pains and eclamptic spasms are caused, Kienlin states, chiefly by the muscular contractions and the dyspnea.

Klinicheskaja Meditsina, Moscow

5: 643-714 (June 27) 1927

Empiricism and Theory in Medicine. B. P. Karpoff.—p. 643.
Clinical Forms of Hodgkin's Disease. A. P. Bondireff.—p. 654.
*Phrenicus Phenomenon in Cholelithiasis. P. K. Bereskin.—p. 665.
*Diagnostic Errors in Cases of Pulmonary Tuberculosis Complicated by Nerve Lesions. F. I. Meyerovich.—p. 675.
Pathologic Reflexes Between Attacks in Epilepsy. L. G. Tchlenoff.—p. 683.
Method of Artificial Hyperthermy in Progressive Paralysis. B. A. Militzin.—p. 693.

Significance of Phrenic Nerve Phenomenon in Gallstone Disease.—The phenomenon is one of tenderness or pain and is elicited by pressure on the neck between the insertions of the two bellies of the sternocleido-mastoid muscle on the right side. This is supposed to be specific for disease of the gallbladder. Painful impulses from an inflamed gallbladder reach the phrenic plexus via the celiac plexus, and are then conducted along the phrenic nerve. This sign was positive in 80 per cent of Bereskin's cases.

Diagnostic Errors in Cases of Pulmonary Tuberculosis Complicated by Nerve Lesions.—Enlargement of bronchial and mediastinal glands, thickening of the mediastinal pleura and adhesions of the pleura can cause pressure on the nerves. Irritation of sensory nerve endings at a distance from their source, the viscerosensory reflex of Mackenzie, can give rise to symptoms which are difficult to interpret. Among diagnostic errors resulting from the involvement of the vagus, the phrenic and the sympathetic, are various abdominal conditions, acute peritonitis, gastric or duodenal ulcer, appendicitis, renal colic, gallstone colic and heart disease. Tender points along the course of the phrenic nerve are very suggestive of its involvement. Only by careful examination and by remembering the possibility of the involvement of the nerves can serious errors be avoided.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

71: 1093-1160 (Sept. 10) 1927

*Acute Osteomyelitis. A. E. Nordholt.—p. 1096.
*Origin of Automatin. H. Zwaardemaker and P. Arons.—p. 1111.
*Origin of "Glass Splinters" in Anterior Chamber of Eye. K. Bos.—p. 1118.

Acute Osteomyelitis.—Nordholt analyzes 100 cases of acute osteomyelitis. In one case of infection of the jaw bone, Plaut-Vincent's bacilli were found. A furuncle had been present a short time before the onset in fourteen cases. Two cases followed scarlet fever, and two measles. In only one case was the original focus of infection found in the tonsils. Trauma appeared to have etiologic importance in fifteen. In early cases, he approves of incising the abscess and drilling into the bone in one or two places. If the abscess has existed more than a few days, he believes that opening up the marrow cavity is superfluous; the abscess "membrane" in the marrow has formed by this time and should, he holds, be let alone, as it is the best protection against further spread of the infection. Sequestrectomy should be undertaken only when the roentgenogram shows complete separation of the dead bone.

Origin of Automatin.—From further researches on automatins, Zwaardemaker and Arons state that the mother stuff, "automatogen," is present in the skeletal muscles, in the blood and in the heart muscle. It is continuously activated and changed into automatin by the beta rays of the potassium present in the body. The nodal tissue of the heart possesses a special affinity for automatin, in consequence of which automatin is found there in greater amount than elsewhere. Within physiologic limits, the action of automatin on the heart is positively chronotropic.

"Glass Splinter" Formations in the Eye as Consequence of Forceps Delivery.—A boy, aged 10, was examined for defective sight. With the slit lamp glassy streaks were observed, running each in a straight line and nearly parallel to one another, in the anterior chamber of the right eye. It was learned that the child had been delivered by high forceps and that injury to this eye from pressure by the forceps had been noted directly after the birth. The eye had been cared for at the eye clinic, but the slit lamp was not used on that occasion and the condition now observed went unnoticed. Bos believes with Peters, who made microscopic examinations in a similar case, that the streaks, which resemble splinters of glass, were caused by rupture of Descemet's membrane, resulting in the formation of thin bands, the margins of which had drawn together so that the bands assumed cylindrical form. He constructed a model of the cornea from half of a rubber ball, lined with celloidin, to represent Descemet's membrane, and found that when this rubber cup was compressed in the vertical direction, so that the horizontal meridian was lengthened, vertical tears occurred in the celloidin, dividing the latter into narrow bands.

Acta Psychiatrica et Neurologica, Copenhagen

2: 87-193, 1927

*Huntington's Chorea with Endocarditis and Polyarthritis. J. F. Clancy. —p. 87. In English.
Pernicious Anemia with Sclerosis and Polyneuritis Presenting Symptoms of "Paraplégie des Vieillards." H. de Jong.—p. 105.
Neurobiotaxis: Psychical Law in Structure of Nervous System. C. U. A. Kappers.—p. 118. In English.
Manic Depressive Psychosis (Circular Form) with Alternating Quotidian Phases. F. Wiesel.—p. 146.
*Encephalitis After Vaccination. D. Wiersma.—p. 167. In English.

Huntington's Chorea in the Aged.—Clancy describes a case of chronic progressive chorea in a woman, aged 69, who had had endocarditis in her youth and polyarthritis later in her life. Some other members of the family suffered from choreic movements. The histopathologic examination showed that this was a true case of Huntington's chorea. This observation points to the conception that here an exogenous influence had been present which affected a brain that was already weakened by hereditary influence.

Encephalitis After Vaccination.—Wiersma reports eleven cases of severe cerebral disturbances following vaccination. The so-called incubation period varied from nine to nineteen days and mostly amounted to eleven or twelve days. Convulsions were present in five cases, paralysis of one limb or more could be confirmed only three times, whereas in two cases it was impossible to make out whether a real paralysis was present or not. Only twice were convulsions and paralysis found together, and in one case they occurred in different limbs, the convulsions in the arms and the paralysis in the legs. The muscle tonus was low in almost every case, and very often the tendon reflexes had disappeared.

Bibliotek for Læger, Copenhagen

119: 1-47 (Jan.) 1927

*Leukemic Tumors of Kidney. J. Foged.—p. 1.
*Early Diagnosis of Lead Poisoning. K. Kjer.—p. 21.
Human Iso-Agglutinins with Special Reference to Conditions in Cancer. E. W. Johannsen.—p. 42.

119: 1-56 (Feb.) 1927

Technic of Antithoracic Esophagoplasty. T. Rovsing.—p. 22.
Renal Tuberculosis. H. Strandgaard.—p. 29.
Case of Spina Bifida Occulta. T. Eiken.—p. 39.
Operative Treatment of Hypertrophy of Mammae. J. Foged.—p. 47.

Leukemic Tumors of Kidney.—Foged reports a case of bilateral renal tumor in a child, aged 2, with normal blood picture and no enlargement of spleen or lymph glands. After removal of the right kidney, a typical lymphatic leukemia developed. Marked diffuse infiltration was found in the extirpated kidney. He considers bilateral renal tumor the first stage of an aleukemic leukosis. His study of cases of renal tumor reported in the literature and in the necropsy material of Copenhagen hospitals and of this case shows that leukemic disease of the kidney is seldom solitary, usually appears in typical leukosis, and most often in children. Only lymphatic leukosis was encountered. The infiltration is due to increase in lymphocytes in the disturbed organ. The two kidneys are about equally affected. Macroscopically, the kidney seems hyperplastic, microscopically universal infiltration, without invasion of the renal epithelium, is seen. The clinical picture is not characteristic. He states that the bilateral nature of the lesion is important.

Early Diagnosis of Lead Poisoning.—Sixty-one workmen handling lead were examined by Kjer every two weeks from October, 1924, to June, 1925. He says that observation at least twice monthly is necessary in this occupation. He rejects tests for hematoporphyrinuria in ambulant practice, but finds the test an excellent indication with a twenty-four hour specimen of urine. Basophilia is a useful early sign, which, used quantitatively, also shows the degree of intoxication. More than 1,000 granulated erythrocytes per million indicates danger of intoxication. Subjective symptoms do not usually develop until this limit is reached. Anemia is a constant but usually late symptom. Since some persons seem hypersensitive to lead, he does not place absolute reliance on a single symptom, such as granulation of the erythrocytes. Elderly persons and those with a history of lead poisoning are especially susceptible.

Finska Läkaresällskapets Handlinger, Helsingfors

69: 653-725 (Aug.) 1927

Mortality from Tuberculosis in Helsingfors. I. Rosqvist.—p. 653.
Payment of Life Insurance in Cases of Suicide by Insane. E. Ehrnrooth. —p. 674.
*Case of Tuberculous Ovarian Cyst. E. A. Björkenheim.—p. 685.
*Seasonal Variations in Phosphorus Content of Blood in First Two Years of Life. K. Bruun.—p. 694.

Case of Tuberculous Ovarian Cyst.—In Björkenheim's case, the patient, aged 23, gave a history of pleuritis. Operation revealed a unilocular tuberculous ovarian cyst extending from the right ovary to Douglas' pouch and adherent to its base, with tuberculous changes in both tubes. A primary ovarian cyst, secondarily infected by tubercle bacilli, seems probable to him. He says that infection of the tubes occurred from the lungs or pleura by the hematogenous route. Whether the infection then spread to the cyst by the lymphatic route, or whether the cyst was infected hematogenously from the lungs is uncertain. The recovery in this instance is definitely ascribed to the fact that the peritoneum was not involved in the tuberculous infection.

Seasonal Variations in Phosphorus Content of Blood in First Two Years of Life.—Bruun's investigations (from the fall of 1924 to the fall of 1925) on the phosphorus content of the blood in healthy children in the first two years of life showed, besides a sudden rise in the first month, probably independent of the season, regular seasonal variations, which, from the difference between the Helsingfors and New York curves, are, perhaps, unequally marked in different parts of the world.

Ugeskrift for Læger, Copenhagen

89: 851-878 (Sept. 22) 1927

Hepatitis. E. Meulengracht.—p. 851.
*Investigations in Racial Biology in Greenland: III. Treatment with Metallic Salts. E. Bay-Schmith.—p. 859.

Investigations in Racial Biology in Greenland.—Bay-Schmith studied the Eskimo and presents a curve to show the increase and decrease in blood groups I and II, respectively, in the transition from absolute isolation to unlimited intercourse with the outside world. The graph shows further that the index remains constant, the B characteristics not changing until a mingling of races occurs.